THE Journal OF THE Kansas Medical Society

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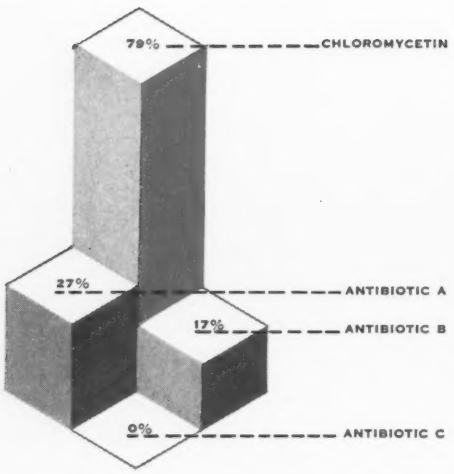
MARCH
1956

VOL LVII
NO III

SENSITIVITY OF COMMON PATHOGENS TO CHLOROMYCETIN AND THREE OTHER MAJOR ANTIBIOTIC AGENTS*



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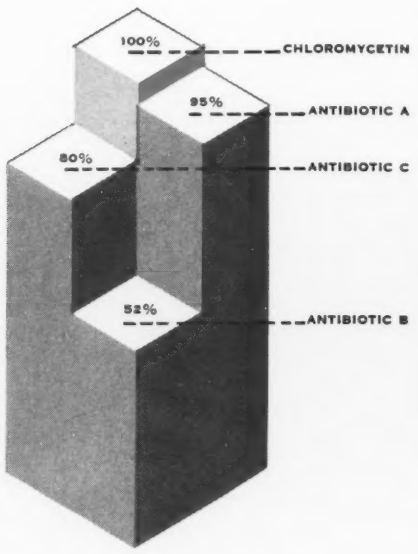
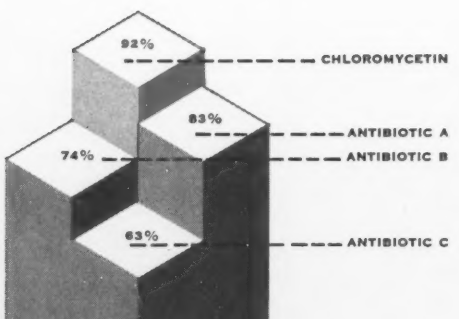
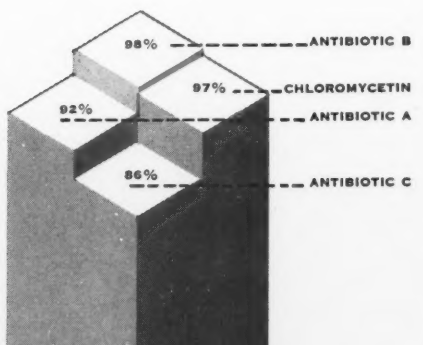
(431-506 STRAINS)



STREPTOCOCCUS VIRIDANS
(42-58 STRAINS)



NONHEMOLYTIC STREPTOCOCCUS
(109-141 STRAINS)



HEMOLYTIC STREPTOCOCCUS
(179-197 STRAINS)

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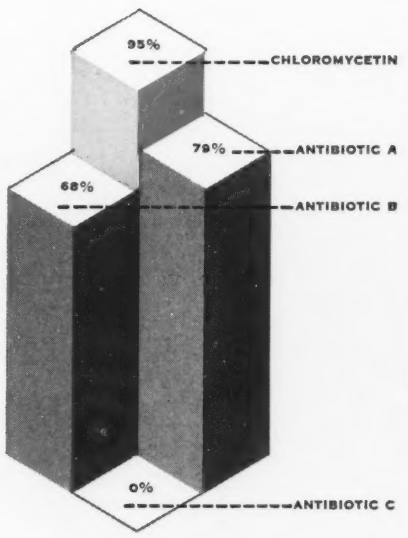

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references: (1) Altemeier, W. A.; Culbertson, W. R.; Sherman, R.; Cole, W.; Elstun, W., & Fultz, C. T.: *J.A.M.A.* 157:305, 1955. (2) Weil, A. J., & Stempel, B.: *Antibiotic Med.* 1:319, 1955. (3) Jones, C. P.; Carter, B.; Thomas, W. L., & Creadick, R. N.: *Obst. & Gynec.* 5:365, 1955. (4) Austrian, R.: *New York J. Med.* 55:2475, 1955. (5) Murphy, F. D., & Waisbren, B. A., in Murphy, F. D.: Medical Emergencies: Diagnosis and Treatment, ed. 5, Philadelphia, F. A. Davis Company, 1955, P. 557. (6) Felshin, G.: *J. Am. M. Women's A.* 10:51, 1955. (7) Kass, E. H.: *Am. J. Med.* 18:764, 1955. (8) Tebrock, H. E., & Young, W. N.: *New York J. Med.* 55:1159, 1955. (9) Stein, M. H., & Gechman, E.: *New England J. Med.* 252:906, 1955. (10) Branch, A.; Starkey, D. H.; Rodgers, K. C., & Power, E. E., in Welch, H., & Marti-Ibáñez, F.: Antibiotics Annual, 1954-1955, New York, Medical Encyclopedia, Inc., 1955, p. 1125. (11) Munroe, D. S., & Cockcroft, W. H.: *Canad. M. A. J.* 72:586, 1955. (12) Norris, J. C.: *M. Times* 83:253, 1955.

*This graph is adapted from Altemeier, Culbertson, Sherman, Cole, Elstun, & Fultz.[1] It represents the second and concluding part of data presented in a previous issue.

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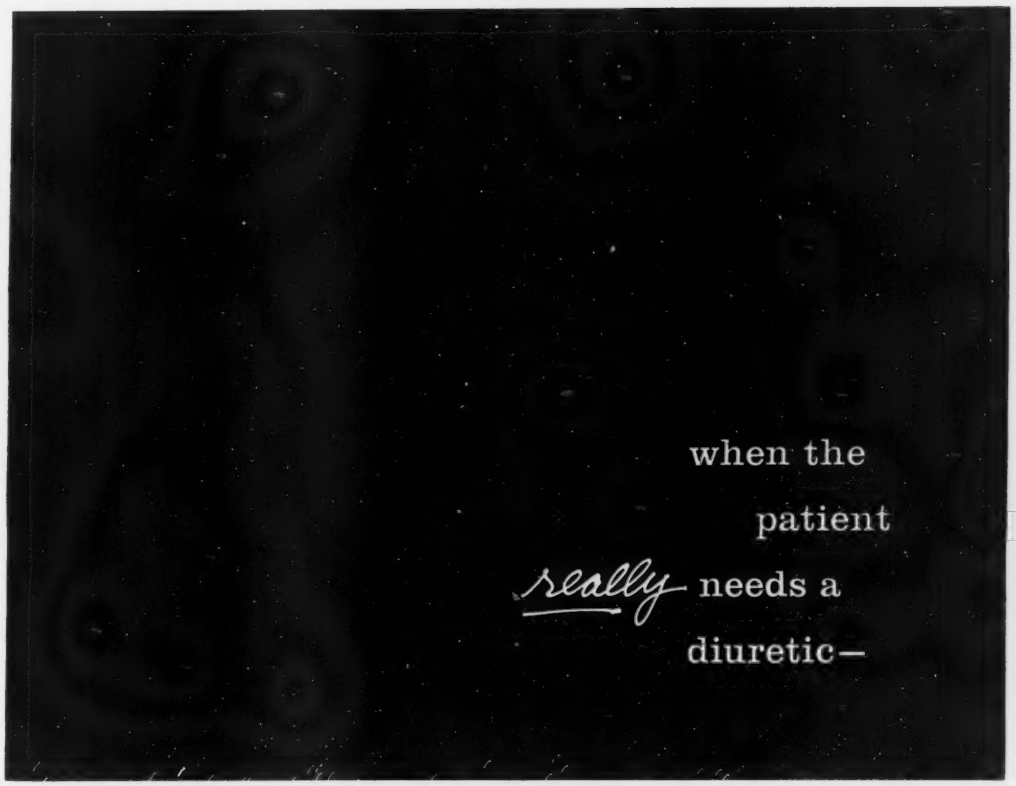

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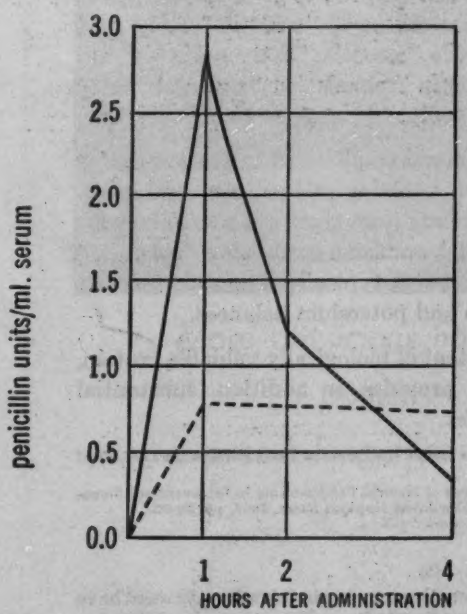

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1. Wright, W.W.: Personal communication.
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1. Deuel, H. J., Jr.: Newer Concepts of the Role of Fats and of the Essential Fatty Acids in the Diet, Food Res. *20*:81 (Jan.-Feb.) 1955.

2. Meng, H. C.: Preparation, Utilization, and Importance of Neutral Fat Emulsion in Intravenous Alimentation, in Najjar, V. A.: Fat Metabolism, Baltimore, The Johns Hopkins Press, 1954, pp. 69-92.

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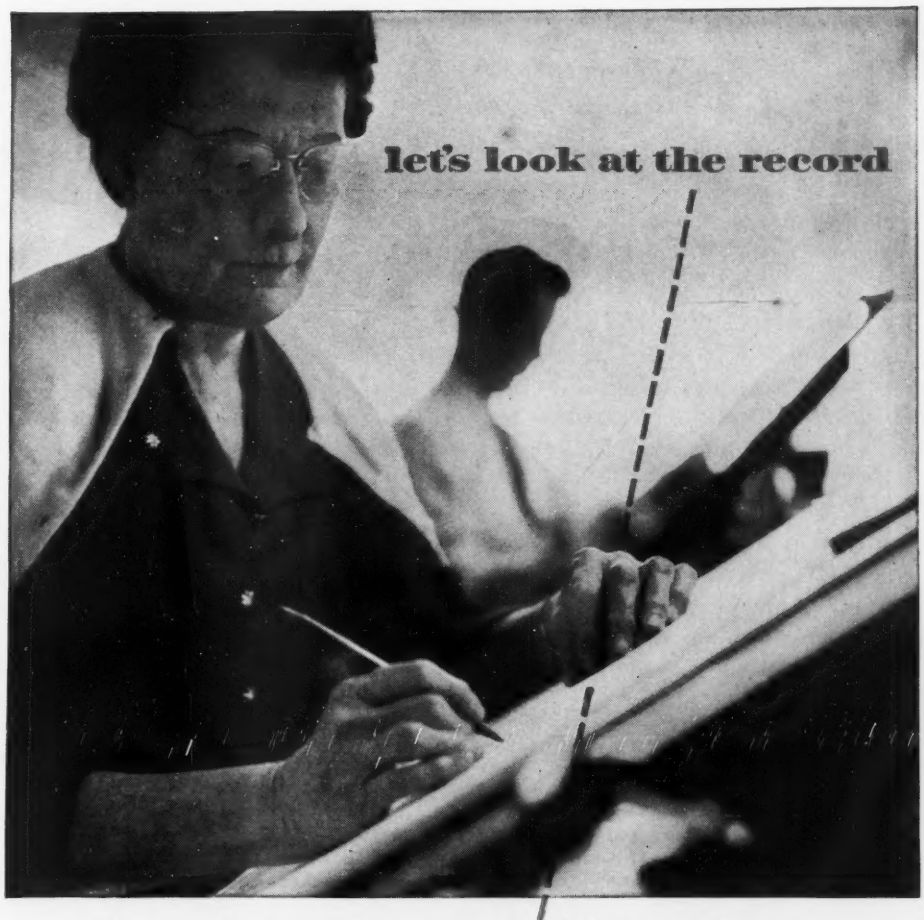

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"Diagnosis and Treatment of Malignancies of the Small Bowel"

WILLIAM J. ENGEL, M.D.
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"Retroperitoneal Tumors"

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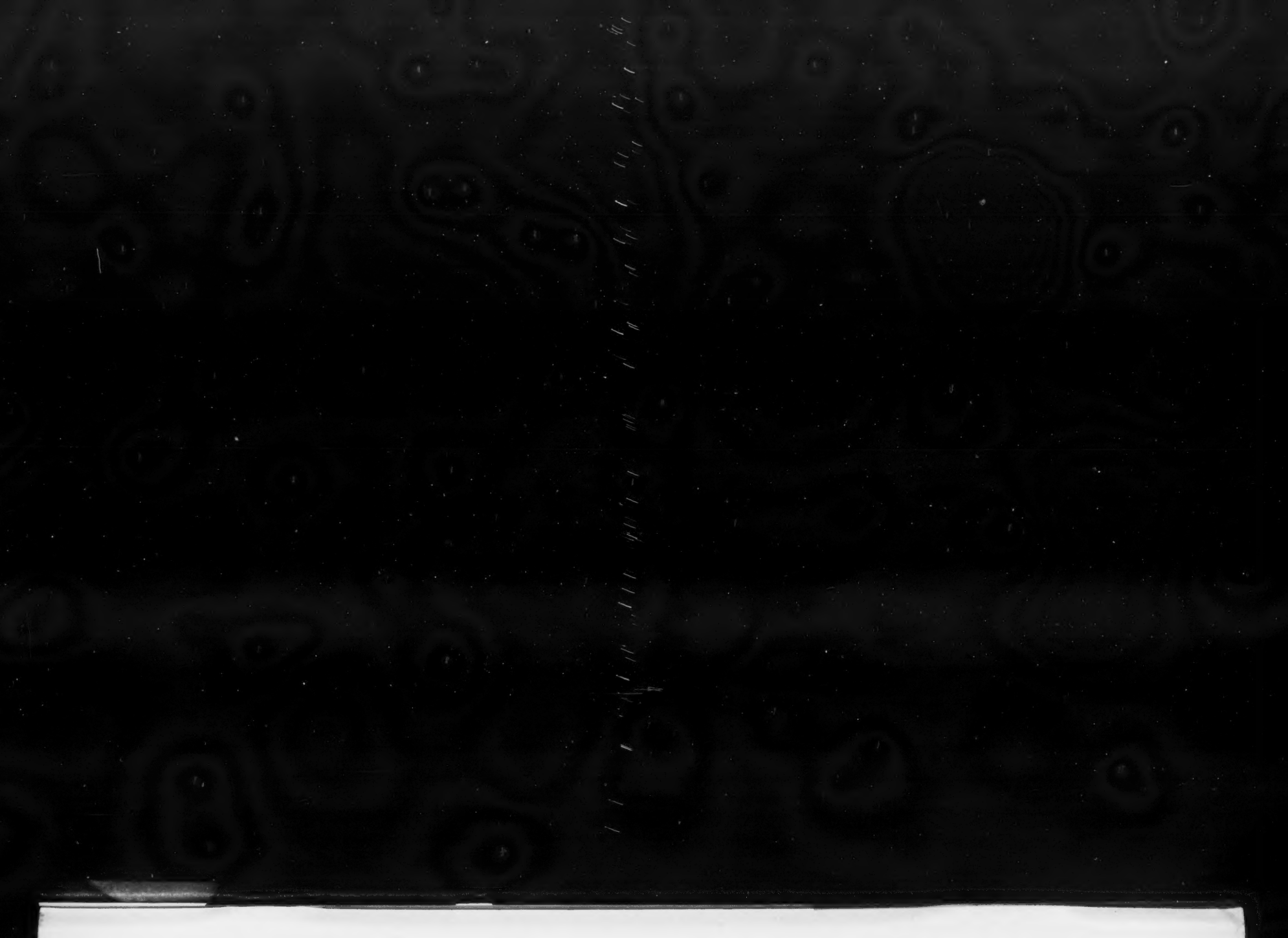

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References: 1. Bunim, J. J., et al.: J.A.M.A. 157:311, 1955. 2. Forsham, P. H., et al.: Paper presented at First Internat. Conf. on Prednisone and Prednisolone, New York, May 31-June 1, 1955. 3. Perlman, P. L., and Tolksdorf, S.: Scientific Exhibit presented at A.M.A. Annual Meet., Atlantic City, June 6-11, 1955.

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97th Annual Session

Kansas Medical Society

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Formal Programs—Mornings, Tuesday, May 1, and Wednesday, May 2

Panel Discussion on Medical Economics—Afternoon, Tuesday, May 1

Panel Discussion on Acute Abdominal Pain—Afternoon, Wednesday, May 2

Specialty Society Meetings and Programs—Morning, Thursday, May 3

Meetings of House of Delegates—Evening, Tuesday, May 1, and Afternoon, Thursday, May 3

Annual Banquet—Wednesday, May 2

SPORTS EVENTS

Monday, April 30

Shooting at Topeka Gun Club **Golf at Topeka Country Club**

Sportsmen's Banquet at Topeka Country Club

TUESDAY ECONOMICS SPEAKERS

Kenneth B. Babcock, M.D., Chicago
Director, Joint Commission on Accreditation of Hospitals

Dwight Murray, M.D., Napa, California
President-Elect, American Medical Association

William Alan Richardson, Oradell, New Jersey
Editor of *Medical Economics*

Donald P. Trees, M.D., Wichita
Editor, *Bulletin of Sedgwick County Medical Society*

WEDNESDAY SCIENTIFIC SPEAKERS

William C. Keettel, M.D., Iowa City
Obstetrician and Gynecologist

Philip J. Hodes, M.D., Philadelphia
Radiologist

O. Sidney Orth, M.D., Madison, Wisconsin
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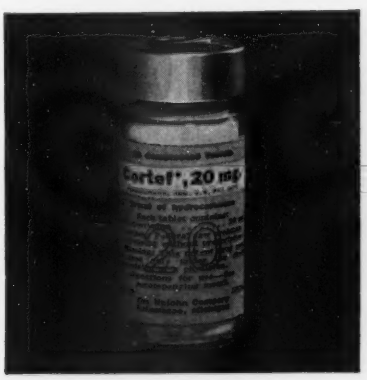

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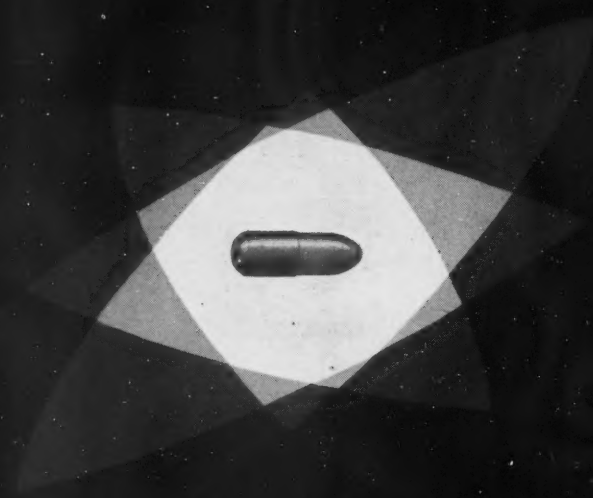

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Volume LVII **MARCH, 1956** **No. 3**

University of Kansas School of Medicine

An Outline of Its Facilities, Policies, Accomplishments, and Objectives

W. CLARKE WESCOE, M.D., Dean, *Kansas City*

It has been customary for several years for the JOURNAL OF THE KANSAS MEDICAL SOCIETY to devote its March issue to the University of Kansas Medical Center. In the past this issue has contained a series of scientific presentations by members of the medical faculty. This year it was the desire of the Editorial Board that the issue be devoted to a factual review in order that the membership of the Society might be better informed concerning Medical Center programs. The faculty was delighted to accede to this request and this issue, therefore, has resulted. It contains, as you will see, reports of activities from all departments of the medical school.

Any report on medical school activities, of course, would be incomplete without some statement from administration. Therefore, briefly, administration presents for you the following résumé concerning accomplishments to date and projections for the future.

THE SOCIETY AND THE SCHOOL

Relationships between the medical society and medical school continue at an unprecedentedly favorable level. Through the Committee on Medical Schools, the Committee on Endowment, the Council, and the secretary's office a close, friendly, and rewarding liaison has been established. The school is grateful for the continuing support of the Society, without which its development and growth would suffer. It is fair to say that these relationships and this support cannot be matched anywhere by any other medical school and medical society. Kansas is fortunate, indeed.

MEDICAL SCHOOL ADMISSIONS

Since 1949 the medical school has admitted entering classes of at least 100. The actual numbers of entering students have ranged from a high of 123 in 1952 to a minimum of 101 in 1955.

Ofttimes the question is asked, "Why are admissions restricted in numbers?" The answer is fairly simple. The number of students admitted must be geared to the facilities available for instruction and the number of faculty members available for teaching. Actually, at present, the medical school's optimum class figure is 100. This figure represents that number for whom laboratory facilities and faculty are available. Any additional student above that figure places an almost insurmountable burden on our first year facilities in Lawrence. More will be said about these facilities later.

Selection of Students. Faced with a limited number of places in a class and a simultaneously limitless number of applicants, it is evident that the careful selection of candidates is one of the primary problems of the medical school. This is true not only of the University of Kansas but also of every other American medical school.

Requirements. The medical school requires that each applicant be enrolled in a college of liberal arts and be at such a stage in his education that his baccalaureate degree will be awarded prior to the opening of medical school classes. The combined degree program, which permitted entrance after three years of collegiate preparation, is no longer offered. The faculty is convinced that a physician needs a broad

liberal education to fit him for his profession. Consequently, no professional degrees such as pharmacy or engineering are accepted for admission. These regulations can be waived in exceptional circumstances but the faculty is reluctant to grant waivers of any kind.

Mechanism of Selection. Committee. The responsibility for admissions to the school has rested for years in a faculty Committee on Admissions. At the present time this committee consists of a chairman, who is assistant dean of the school, and nine other members of the faculty. The faculty members have diversified interests: two are basic scientists; one is a clinician with basic science interests; four are clinicians; two are psychiatrists. The diversity of interest assures a well-balanced committee.

A word, perhaps, should be said regarding the psychiatrists. It is the experience of medical schools that the majority of student problems that arise after admission are based on emotional problems of the individual. For that reason we try diligently to ferret out emotional problems before admission. The unstable, immature individual has no place in medical school.

Procedures. Each applicant for admission transmits to the medical school through his college registrar a transcript of his academic record. This record is evaluated by our own registrar.

In addition, each applicant must take the Medical College Admission Test, developed and administered by the Educational Testing Service of Princeton, New Jersey, for the Association of American Medical Colleges. This test is divided into four parts: verbal ability, quantitative ability, modern society, premedical sciences. Test scores, which reveal the knowledge of the applicant and his aptitudes for medicine, are released to the medical school directly by the testing service.

The medical school requests from the applicant's undergraduate school an evaluation of the candidate. This preferably comes from a committee of that faculty rather than from a single member. The evaluation covers scholarship (fund of information, comprehension, problem solving ability), performance (reliability, application and initiative, judgment, originality), and character (rapport with colleagues, poise, ethical standards, reliability). In each of these categories an evaluation of superior, satisfactory, or unsatisfactory is given.

Finally, each applicant who satisfies the minimum academic requirements for admission is invited to Kansas City for a personal interview. Interviews are held usually during the Christmas recess period. Approximately 50 applicants are interviewed each day in the following manner. Three members of the Committee on Admissions meet jointly with three applicants for a period of 45 minutes. Each applicant is then interviewed for five minutes by the committee chairman and, lastly, each applicant visits with the dean for five minutes.

At the end of the interviews all information is pooled, and on the basis of all records, selections are made.

Residence Requirements. Preference is given to qualified residents of Kansas. In diminishing order, thereafter, preference is given to residents of the surrounding area who have some connection with Kansas, to residents of states that have no medical schools, to other persons.

Comment. One of the major problems facing medical education today is a shortage of *qualified* applicants. Since the rush of the post-war years, the numbers of applicants have dwindled until this year there were only 13,000 applicants for approximately 7,600 places in first-year classes. These figures mean, of course, that medical schools today are accepting 1 out of every 1.8 applicants. The net result is that some schools have no opportunity to be selective. This statement relates particularly to those schools where residence requirements are stringent and the numbers of applicants are low.

The future looks brighter as college enrollments increase, but the time has obviously come for medicine to recruit members for its profession. Every member can serve tremendously by influencing able and outstanding young men and women into medical study. If we are remiss and allow our *best* young people to embark upon other careers, we shall live to see our standards suffer.

THE CURRICULUM

Your medical school, like many others, has spent considerable time in revising its curriculum in an attempt to make it more meaningful to the student. Curricula in the past have grown more by a process of addition and accretion rather than by a process of careful selection and deletion. For two years the faculty at Kansas studied this problem and for two years now our curriculum has been as follows:

The First Year. The curriculum of the first year is designed to present in an integrated fashion the growth and development of the normal human organism. The departments of anatomy, biochemistry, physiology, and psychiatry participate in this program throughout the academic year without regard to ordinary lines of departmental organization. The program consists of the following: (A) orientation; (B) development and structure; (C) behavior of the living organism; (D) communication between the organism and its environment and among its various parts; (E) interchange of materials between the organism and its environment and among its various parts; (F) utilization of materials; (G) excretion of waste products; (H) reproduction.

In a curricular pattern of this type it is possible for the student to learn fundamental facts in an over-all pattern rather than, as in the past, to learn isolated facts in separate courses. All examinations are comprehensive.

The Second Year. Similarly, the second year curriculum is designed to teach the fundamentals of the biology of human disease and the abnormal organism. In this year the departments of pathology, microbiology, pharmacology, and preventive medicine correlate their instruction so that similar subjects are studied from each viewpoint at the same time. Additionally, in this year physical diagnosis, the introduction to clinical medicine, is taught in the same correlative program. Once more, final examinations are comprehensive.

The Third Year. The third year is divided into three trimesters of in-patient clerkship, one of internal medicine, one of pediatrics, and one of surgery. Didactic classroom hours are held to an absolute minimum; teaching is at the bedside. Most of the teaching program is carried on through the techniques of ward rounds, conferences, seminars, and small group discussions.

The Fourth Year. This year is divided into four quarters as follows: one of preceptorship (general practice, state hospital), one of internal medicine (out-patient clerkship), one of obstetrics and gynecology (in-patient and out-patient), and one of surgery (in-patient and out-patient).

Elective Work. Each student is provided the opportunity to take elective courses and to pursue investigation. The summers are free for such activity as well as free time during the formal academic year.

National Board Examinations. For a medical school faculty to be able to analyze its teaching effort and its products, it is essential that it compare itself with other similar programs. One mechanism for so doing is available in *National Board Examinations.* The faculty of the school voted to make these examinations compulsory effective with the class entering in September, 1954. The results of these examinations will not be the measure of pass or fail for a student; rather, they will inform the faculty of its students' performance in comparison to others from many schools. The student, of course, may use the examinations for licensure. We await the first results with interest.

RESEARCH

The medical school carries on an active research program with an annual budget of approximately $750,000. *All* of this budget is provided by sources other than the state treasury; the medical school has never been granted an appropriation for research. The sources of research funds are the U. S. Public Health Service, the various voluntary health agencies, charitable foundations, and private philanthropy. Were it not for this support, the medical school would have no research program of note.

Private philanthropy is becoming increasingly a greater source of research funds. In the last few years notable gifts have been made and bequests given by private individuals to further the research effort. The establishment of memorials of large and small amounts alike has made possible the purchase of necessary equipment and the payment of qualified personnel. To its friends, the medical school is deeply in debt.

All endowments, bequests, and gifts for the medical school are made to the Kansas University Endowment Association through whose good offices the grantor is assured that every cent so given will be spent for the purposes laid down. Many members of the Society have been instrumental in providing such donations and to them we are most grateful.

SERVICE

The third major function of the medical center is to provide medical service to the state and to the profession. All of the service provided relates to the educational effort.

Out-Patient Department. The out-patient department, in which most of the fourth year and some of the third year teaching is accomplished, serves only the medically indigent. Clinic patients are screened carefully by social service to insure that no person capable of paying for medical care is seen. In the course of each year about 100,000 patient visits are made to this department.

In-Patient Facilities. Hospital patients are of two main types: the indigent (referred by county welfare departments) and the paying (referred by practicing physicians). No patient is admitted unless referred by a physician to a physician of the faculty. Each patient admitted is a teaching patient and is seen by medical students, interns, residents, and attending physicians. It is only in this manner that a teaching hospital can be maintained. Approximately 14,000 in-patient admissions occur each year.

Affiliations. The medical center contains only 600 beds. For adequate teaching, therefore, it has been necessary for the medical school to establish affiliations with other hospitals. At present our affiliated hospitals are: the Kansas City Veterans Administration Hospital (medicine, surgery), the Children's Mercy Hospital (pediatrics), the Kansas City General Hospital (obstetrics, pediatrics), and the Menorah Hospital (medicine, surgery). The total costs of such affiliations are borne by the affiliating hospitals who thus make a contribution to medical education.

FACILITIES

The construction of new buildings to bring the medical center up to modern standards, sparked by the legislative appropriation of 1949, has been practically completed. When the psychiatric unit is occupied in March, 1956, that phase of the development program will have been accomplished. The medical center then will have a capacity of 600 beds and adequate facilities for the instruction of the three classes of medical students. Kansas has reason to be proud of its medical center.

Library. The most glaring defect for years in the medical school has been its lack of decent library facilities. This defect has become even more pronounced with the addition of more students.

The present medical library is located on the second floor of the Administration Building, an area not designed for such use. Despite the fact that it is excellently staffed and contains volumes to the total of 40,000, its use is severely hampered by its inadequate and crowded facilities. For instance, there are seats for only 50 persons in the reading room, this with a total student population alone of some 700. There are no study areas available in the stacks.

Fortunately, the Board of Regents and the legislature have approved our request for $560,000 for a new library unit. The plans for it are ready, and bids are being asked at the present time. Construction can begin immediately after a bid has been accepted; the new unit should be completed by the summer of 1957.

Hopefully, then, we anticipate that by spring we can see this building begin to take shape. It will be located on the southwest corner of the Administration Building, to match Hinch Hall on the northwest. It is projected as a two-story and basement structure to house both the medical library and the Clendening Library of the History of Medicine. It will contain sufficient space for expansion and will have seating facilities for 225.

Future Plans. With a library unit available it is possible to project, at long last, the final consolidation of the medical school on a single campus. This consolidation is our next proposal.

The weaknesses of a divided school are self-evident. The student, for example, must be oriented to the study of medicine twice, once in Lawrence, once in Kansas City. The student for a period of a year is out of contact with the majority of the faculty and completely divorced from the clinical atmosphere and patients. Similarly, the first year faculty is removed from its colleagues.

The circumstance of geographical division prevents the inception of many new programs and hampers many others. The next step, therefore, will be to ask appropriations for a medical science building to house the first year on the Kansas City campus. If certain federal legislation is passed, this dream will become a reality within a very few years; otherwise, this program will not be a reality for at least six years. It is a *must.*

After consolidation, the real need for the campus will be research facilities. Generally, all the necessary beds are available and no hospital expansion is anticipated.

Student Funds. The medical school continues to look with disfavor upon scholarships but with favor upon loan funds. Loans imply a responsibility on the part of the borrower; by their repayment other students can be helped. Substantial loan funds have been accumulated, and our financial problems for students seem well on the way to solution.

The John M. Porter Fund. The Kansas Medical Society responded in dramatic fashion to the establishment of this fund after the untimely death of our beloved friend. A sum in excess of $4,000 is now on deposit to assist students in need. For this additional fund the medical school is deeply in debt to the Society.

THE AMERICAN MEDICAL EDUCATION FOUNDATION

All medical schools are experiencing financial difficulties and yours is no exception. The flexible funds made available by the AMEF have been Godsends. They have made possible programs that otherwise would have been out of reach; they have provided salaries for faculty that otherwise could not have been obtained. The contributions made by the profession can keep the schools alive. The schools need these contributions desperately.

The medical school, perhaps, has nagged about this problem. It is a pleasure to report that Kansas physicians now appear to be setting the pace. Contributions in the last few months exceed any past experience. For this indication of your continuing support all of us are extremely grateful.

GENERAL

It would be negligent, indeed, to close without paying tribute to more members of the profession who have assisted in the teaching program. To the preceptors we are deeply in debt; they have made a tremendous contribution, they have become favorites of our students, and we are grateful. To the lecturers who voluntarily contribute their services we are also in debt and publicly so acknowledge. Finally, to the members of the Menninger Foundation who actively teach in our psychiatry program we are grateful indeed.

The heart of medical education is the support of the physician. We look forward to even closer relationships and to many years of mutual progress for our society and our school.

Department of Anatomy

The six full-time men assigned to teaching medical students unanimously agree that our first and foremost task is to do a good job of teaching. To this we have dedicated ourselves. The integrated curriculum for the first year is outlined below with emphasis on the contributions from the Department of Anatomy.

A. *Orientation.* Five days. A period of orientation during which an attempt is made to acquaint the student with the organization and physical make-up of his medical school, the nature of his work and his goals while in medical school, the type of attitude to be developed, the type of student-faculty relationship to be sought, and the relationship of his work in the basic sciences to clinical medicine.

B. *Development and Structure of the Normal Human Organism.* Thirteen weeks. During this period the student concentrates his effort on the study of the gross and microscopic structure of the normal individual, correlating adult morphology with embryonic development and with behavior. Emphasis is placed upon the unity of the organism and the continuity of development throughout life. During the remainder of the year the study of anatomy is expanded, in conjunction with the detailed study of function, by the use of prosections, the study of models and histological slides, and in joint conferences between students and faculty members from all four departments. Along with structural development, the student is introduced to the development of personality.

C. *General Introduction to the Study of the Behavior of the Living Organism.* One week. General characteristics of living tissues and organisms and the methods used for their study.

D. *The Communication of Information between the Organism and Its External Environment and among the Various Parts of the Organism.* Five weeks. Structural and functional relationships in the central nervous system which enable it to play a major role in integrating the behavior of the whole organism and providing a homeostatic relationship to its changing environment.

E. *The Interchange of Materials between the Organism and Its External Environment and among the Various Parts of the Organism.* Seven and one-half weeks.

1. The structure of the transport systems within the organism.

F. *The Excretion of Waste Products and the Maintenance of the Constancy of the Internal Environment.* Two weeks. Renal structure and function, the maintenance of water and electrolyte balance, and body temperature regulation.

G. *Reproduction.* One week. The endocrinological regulation of reproduction: gametogenesis, folliculogenesis, fertilization, pregnancy, and reproduction.

Anatomy lectures and laboratory work throughout the year are designed to correlate structure at the gross and microscopic levels with function from the biochemical and physiological standpoints.

The student has available, as a study guide, a syllabus for the material of the first year prepared jointly by members of the four departments.

Examinations are given at intervals throughout the year and a comprehensive examination is given at the end of the year. Promotion to the second year in Kansas City will depend upon the student's performance on these examinations and on his work in the laboratories and conferences. The students will receive no letter or numerical grade, but will simply be passed for promotion or not.

At the beginning of the year, each student is assigned to and meets regularly with a faculty member who acts as his counselor for the entire year, for the purpose of offering help and guidance in any of the problems, academic or otherwise, which may arise in the course of the student's work in the first year.

The work of the entire year is equivalent to a total of 36 semester hours of credit.

RESEARCH

This is in keeping with modern trends of medical education. At a recent Institute of Teaching Anatomy at Swampscott, Massachusetts, considerable time was devoted to the problems of integrating teaching for the benefit of the student's progress. The University of Kansas seems to be one of the few leaders in attacking this problem of integration. Within the space, time, and faculty limitations, a fairly workable plan has been evolved.

The life and spirit of a faculty are not only governed by the enthusiasm of doing a good job of teaching but by the quality and worth of research done by its members. The following is a brief listing of recent interests in the various areas of research.

Basic information has been obtained concerning the sensitiveness of tissues under the influence of various hormones, including the sex hormones as well as those from the thyroid and adrenal. Within the last few years eight men who have been trained in this work are now teaching in eight different medical schools.

Experiments have been conducted with rats in parabiosis to demonstrate that the peripheral nerves are responsible for the transport of tetanus toxin to

the central nervous system. It has been demonstrated that a nerve regenerates to a greater extent into the host rat which is in parabiosis with the donor rat.

Many enzymes and nucleic acids have been analyzed microchemically from various parts of the nervous system. This can be done with an amount as small as a single neuron. The quantitative difference can be chemically determined between a dorsal root cell and a ventral root cell, thus paving the way for understanding why the spirochete attacks the ganglion cell and the polio virus the ventral horn cell.

The relationship of the cerebrospinal fluid space with the other spaces of the body, especially the lymph, has been studied. One cc. of 25 per cent trypan blue injected into the pia-arachnoid space of the opossum disappears within one hour and is found in the spleen.

Internal radiation with radium has proved the megakaryocyte of bone marrow to be the precursor of the blood platelet. Radium deposited in bones of pregnant rats is removed by lactating hormone when the rats are suckling and leaves the mother by way of the milk for suckling rats.

Progress is also being made on the problem of the route taken by the polio virus from the gastrointestinal tract to the central nervous system. A fluorescent dye is available which attaches itself to the antibody of the polio antigen.

Much of the work is related to the study of the enzyme systems as they appear in the developing nervous system. Careful work definitely points the way that there are clear cut chemical patterns associated with the neuronal patterns as they appear in the maturing central nervous system.

Department of Biochemistry

The faculty of the Department of Biochemistry consists of four full-time men on the Lawrence campus and several members with joint appointments on the Kansas City campus.

Medical biochemistry is now taught in the freshman year as part of the whole year course in normal human biology, which includes participation by the Departments of Anatomy, Biochemistry, Physiology, and Psychiatry. Biochemical aspects are taught entirely during the spring semester except for less than two weeks spent on the biochemistry of components of living organisms. Biochemical and physiological aspects of the functioning human organism are taught as a single presentation. On the Lawrence campus, the department also teaches an undergraduate biochemistry course, a year's course in general biochemistry for graduate students, and advanced graduate courses in enzyme chemistry, proteins, nucleic acids, and biochemical preparations. Six Ph.D. degrees have been completed in this department since the first one in 1953.

Research under way in Lawrence includes programs on plasma protein fractionation, enzyme chemistry, pyrimidine metabolism, methyl group and sulfur metabolism, bacterial metabolism, and virus structure and biosynthesis. Research space includes three graduate laboratories on the second floor of Haworth Hall and two new 750-square foot laboratories built just east of the lower part of Haworth Hall. The new laboratories are for plasma protein fractionation and for work on the metabolism of pathogenic organisms, respectively. Special research equipment includes a large electrophoresis apparatus, a Spinco Model E analytical ultracentrifuge, and automatic radioactive tracer counting equipment.

Future plans include mainly an attempt to keep going in the present inadequate building until suitable new quarters are available.

Department of Medicine

Growth and change in the Department of Medicine in the past five years have moved at so rapid a pace that I have not felt previously that a "leveling" point had been reached sufficient to warrant an appraisal and a report. However, by July 1956, our immediate objectives will be done; therefore, for the first time, it is not premature and anticipatory to describe the Department of Medicine's program and developments.

The physical plant additions and alterations have been apparent to each of you, as you have visited the campus. I know that between your visits here, it seemed that a new wing or building would appear overnight. To those of us working on the campus, the physical growth has been spectacular, too. However, the excitement has been tempered by the associated problems of floor plans, equipment, allocation of space and minutiae, such as color schemes, etc. On occasion it has been difficult to recall whether we were interior decorators or physicians.

Getting the physical plant and activating it has been an initial objective for the Department of Medicine; however, this has been done with a certain basic goal or philosophy in mind. The basic philosophy, upon which the growth has been predicated, can be set down in a few lines:

1. To develop as the nucleus of the department a core of general internists. This group of men would be based at the Medical Center with offices and hospital services under their direction. These men

would carry the major portion of the medical students' curriculum in internal medicine. Physicians would be selected who understood that their chief responsibility was to demonstrate the daily practice of medicine *by precept.*

2. To develop around this core of general internists all of the essential specialties of internal medicine. These sections would carry a lesser role in the medical students' curriculum, but would be the essential strength of residency, fellowship, and postgraduate teaching.

3. To combine the above men into a smooth-working team which would give the students instruction by *precept* in the methods and morals of the practice of medicine. No attempt would be made to give a "course" in internal medicine, but the method would be essentially one of presenting a group of men practicing medicine as well as they know how, in near-ideal surroundings. Our goal was to instill in the students an awareness of the science of medicine, and equally, the art. And then to help them sustain their desire for knowledge after graduation, we planned:

4. To strongly support postgraduate efforts for the practicing physician. Each man joining the group would join, not only as a teacher at the undergraduate campus, but with an equal responsibility to the men already in practice.

5. To support research areas within the department and to obtain for these areas mature, talented men who could be virtually free of the demands of the practice of medicine. Efforts would be made to obtain adequate funds to give them freedom from the personal harassments of fund-raising and to give each investigator complete charge of his own investigation.

6. To develop with the general internists, the specialists, the investigators, and the physical plant a residency and fellowship program in internal medicine which would be outstanding; to make this residency program the essential administrative framework of the department with the realization that the strength and spirit of the department would depend to a large measure upon the quality of residents we could attract.

These have been the broad objectives, and this report outlines the accomplishments along this route.

Physical Plant. At the University we now have 124 beds for internal medicine and 42 beds for tuberculosis. In addition we have 25 rooms for research, one floor for out-patient facilities, adequate office space, and special clinical areas in several of the specialties. To strengthen the available bed-patient material, we also administer and staff 218 beds for internal medicine at the Kansas City (Missouri) Veterans Administration Hospital.

Personnel. The full-time physicians, located at the center and Kansas City Veterans Administration Hospital, are 24 in number and divide their chief activities into the following general categories: general medicine, which is subdivided into four sections; the specialties, which are subdivided into cardiovascular disease, chest disease, gastroenterology, hematology, metabolic disease, neurology, and rheumatology and arthritis; and research, which includes the sections of experimental medicine; atherosclerosis research; enzyme chemistry of the heart, and steroid chemistry. All of these sections share, in various appropriate ways, responsibilities for the out-patient clinic, postgraduate teaching, residency and fellowship programs, and investigative work.

In this report I will not attempt to list the tangibles of accomplishment such as numbers of patients seen, autopsy percentage, papers published, etc. Perhaps next year, with the present report as a background, such information will be of interest.

Certain intangible activities could be discussed at length: the junior internal medicine curriculum based on daily patient-care rounds, the senior curriculum based on supervised office practice of medicine, the instruction time given by men practicing in the community, the Friday senior out-patient clinic instruction administered by the Academy of General Practice, the monthly visits as lecturers by internists from out in the state of Kansas, the affiliation with Osawatomie State Hospital, the technique of oral and written examinations sponsored by the department, the administration of sophomore physical diagnosis by members of the department, the numerous conferences and teaching clinics sponsored by the department (the Hixon Hour, Wednesday Grand Rounds, Monday Staff Meeting, Post Mortem Register, C.P.C., Chest Conference, etc.), the grants and endowments obtained, the scope of the residency program, the fields of research, etc. Each of these items could be a separate report.

For the future, we hope to keep to the same basic philosophy. To strengthen the program, we intend to develop a metabolic ward, an infectious disease ward (with an isolation unit), and a neurology ward. The success of such plans is to a great extent dependent upon the section chiefs in these areas. Other specialties of internal medicine have been purposely neglected while developing those which seemed essential. In the near future these additional specialties will be considered. Extension of the residency program to other hospitals will probably occur, also.

The five years this author has spent in Kansas have been a stimulating, exciting, fruitful, maturing, and fatiguing experience.

Department of Medical Microbiology

In the past year the activities of this Department of Microbiology, the youngest department in the School of Medicine, have been the culmination of development that began physically in 1952 with the completion of the Medical Science Building. "Microbiology" seemed preferable as a title since "Bacteriology" was considered too limiting a designation even in the time of Louis Pasteur who originally preferred the term "microbiology." Teaching, research, and development and service indicate opportunities and obligations in a three-pronged attack.

The teaching program for students in the School of Medicine was the first concern of the department. Emphasis is placed on indoctrination and maturation of the student so that he will be soundly equipped to grasp the developments five years hence; at that time, as a young doctor under the pressure of practice or advanced training, he must cope with advice which is handsomely presented and sometimes highly commercial. He must become truly able to request individualized aids, to evaluate the evidence, make up his own mind, or seek appropriate consultation.

The responsibility for teaching microbiology to medical students was assumed by this department after the retirement of Professor Noble P. Sherwood. The goal of the department has been to present a science, basic to the understanding of infectious diseases and reactive states, with stress upon principles that are especially applicable to the human end of the comparative spectrum. The several areas of bacteriology, immunology, mycology, parasitology, and virology, along with the immunochemistry applicable to each, are cohesively presented. The logical etiologic approach frequently involves one or more fields when infectious disease affects the patient and confronts the student of medicine, first in school and later in practice. Teaching has been correlated with other basic medical sciences of the second year, especially with pathology and pharmacology, in a curriculum which was purposefully organized to impart a grasp of the fundamentals of disease processes.

Medical Microbiology 271 is geared especially for medical students in the second year and is a prerequisite for other courses in the graduate school. It starts with a broad orientation over the entire field and produces a common experience for students and potential instructors (graduate and medical student colleagues). Since no premedical requirements in bacteriology now remain and most of the regular students are completely uninitiated, some initial emphasis must be upon ecology and vocabulary. For medical students who have a master's degree in bacteriology or a related field, there has been encouragement and opportunity to carry out special projects, as their time permits. Some of them serve as teaching or research assistants. By now, a fairly even pace of lectures and laboratory experience has been set for second year students based upon accumulated experience and student response over the three years since the new facilities were opened.

Graduate education toward advanced degrees is making excellent progress in a program approved for candidates for both the M.A. and Ph.D. degrees. Six students are progressing nicely in various stages of courses and investigative work (one now is writing a thesis). These advanced studies are available to individuals with a bachelor's degree, and the prerequisites are the same as for entrance to the school of medicine. Medical students, technologists, and research assistants, as well as regular and independent graduate students, may enroll. Eligible doctors in postgraduate medicine are welcome to take courses or participate in the program, with progress to candidacy and achievement of the degree being dependent upon fulfillment of requirements.

Instruction for students in the training course for medical technologists includes 45 regular lectures and demonstrations. These students may enroll in Medical Technology 70 and 71 for university credit toward a bachelor's degree. One day of the annual three-day continuation study for medical technology is devoted to microbiology.

To accomplish tasks and achieve these goals, a diversified staff was required, and such a full faculty has been diligently occupied in fulfilling these responsibilities. A competent and well motivated faculty develop mutual stimulation with inquisitive and purposeful students.

Facilities for laboratory and office space are concentrated on the fourth floor of the Medical Science Building where heightened activities have led to sharing of all space for research and development, class preparations, graduate teaching, and service in special procedures.

The activities of the staff may be divided according to their responsibilities in (a) teaching, (b) research and development, and (c) service. Furthermore, there is subdivision into sections, viz. bacteriology, immunology and immunochemistry, mycology, parasitology, and virology. Each section is headed by a senior staff man in accordance with his primary interest, motivation and background; all are men with advanced graduate degrees. The chairman, who is a doctor of medicine, serves on the integrated curriculum committee for teaching second year medical students and organizes and is moderator of the weekly

integrated seminars for the same group in the first quarter. Each group of 24 second year students has an assigned faculty advisor throughout the year. This advisor is a doctor of philosophy with whom each student has an opportunity for close contact in the laboratory, individualized instruction, and conferences. Many students follow this close association throughout the clinical years and into the period of postgraduate medical education.

In teaching, host-parasite relationship is emphasized in the orientation period which precedes indoctrination in immunology and the more detailed study of special agents. The role of the host and the microorganism is studied as a matter of principle, and the students become acquainted with viruses as well as bacteria, fungi, and parasites early in the initial period of orientation. The lectures are divided among various members of the staff, and certain organisms are used to illustrate and emphasize mechanisms by which microorganisms can cause disease.

Correlation of information concerning infectious diseases is accomplished by ward rounds and conferences which are moderated by an associate in medicine and microbiology; he is also responsible for an elective course (290) designed particularly for medical students in the third year and for postgraduate medical education. Problems of infectious disease, as they apply daily to local community health, and emphasis on the communicability of microorganisms, are brought into the program by the city-county health director, who participates in lectures to the second year class, in conferences and in seminars as associate clinical professor of microbiology and medicine.

Section on Bacteriology: This is the chief area of the chairman who directs attention to problems of host-parasite relationship, streptococci and streptococcal infections, particularly as applied to rheumatic disease and to the prevention of rheumatic fever. These problems are considered as appropriate models for emphasis upon fundamentals related to the human end of the comparative spectrum in clinical research. In the development of what appears to be a new era in preventive medicine, the family doctor is assuming an important role in the prevention of cardiac disease. Tuberculosis is another disease which is emphasized; it follows immediately after the introduction to immunology and hypersensitivity. In the presentation of antibiotics, the microbiologic aspects are stressed, and there is a close association in this area with the Department of Pharmacology.

The immunology and immunochemistry section in association with clinicians is responsible for lectures and the laboratory in teaching of medical students and the correlation of fundamentals of hypersensitivity as applied to the study of allergy in medicine and pediatrics. Immunohematology also is stressed. Each year the course in principles of immunology and immunochemistry (315) is presented to graduate students.

The head of the sections on mycology and parasitology was permitted to accept a fellowship provided by the China Medical Board which allowed him to study tropical medicine in the Central American countries through the summer of 1955. Material from this sojourn has been valuable to classroom teaching and in talks for professional and lay groups.

The section in mycology works in close association with the local, midwest unit of the Communicable Center, U.S.P.H.S., and with the infectious disease section in which there is interdepartmental cooperation with the Department of Medicine. A special lectureship in mycology was presented for students by Norman Conant, Ph.D., who was guest professor in this department during the week in which he was guest speaker in the Department of Postgraduate Education.

The section in parasitology presents its material to medical students in close collaboration with public health and audio-visual education, especially from the standpoint of preventive medicine and tropical disease. A course in Parasitic Protozoa (305) has been presented to graduate students.

The virology section, in addition to the instruction of medical students, presents a course in Viral and Rickettsial Infections (314) for graduate credit.

Those in research and development have been especially active in the following areas of endeavor: The role of heparin and tissue mast cells in proliferation of mesenchymal tissue as related to skin, synovial, and cardiac tissue is being investigated with the support of a contract with the Office of Naval Research. This work includes application of tissue culture and has been in cooperation with the chief of the section of plastic surgery. Two publications have come from this investigation which have dealt with its application to formation of keloids. Parallel efforts have been brought to bear upon the problem of collagen diseases, especially as related to pathogenesis of rheumatic fever, rheumatoid arthritis, and lupus erythematosus. Study of means for the prevention of streptococcal infection and control of rheumatic fever and rheumatic heart disease has been in collaboration with the Children's Convalescent Center; it has been made possible by the sustained assistance of medical and graduate students. At the Children's Convalescent Center a study of siblings in the search for control of rheumatic fever through preventive programs was initiated by this department with the support of local heart associations and with microbiologic laboratory participation made possible through an Office of Naval

Research contract, grants from the National Heart Institute, USPHS, and a pharmaceutical firm. One publication has appeared from these collaborative efforts and three have been accepted for publication.

A battery of tests has been developed to evaluate activity of reactive states with special reference to collagen diseases and keloid formation. This has been applied to clinical investigation and to study of animals, especially dogs and swine, with reference to protein-bound polysaccharides, C-reactive protein, Weltmann reaction, antistreptolysin O titers, and status of heparin by cold precipitate and heparin tolerance. A preliminary report has been published concerning this program. The comparative study of reactions in dogs and swine with those in man has been supported by a grant from the National Heart Institute and through the cooperation of the Department of Surgery in operative procedures on the animals. This is also in collaboration with the cardiovascular and experimental medicine sections in the Department of Medicine.

Medical students have shown initiative in various phases of the programs since the outset, and some of these men are now in postgraduate medical training. One student presented the preliminary paper on "Importance of Studying Siblings" at a national bacteriologists' meeting.

Particular progress is being made in studies by paper electrophoresis on protein-bound polysaccharides and proteins associated with the battery of other tests for collagen diseases. The effort of graduate students has been largely instrumental in developing and applying paper electrophoresis to this research.

One staff member who is research bacteriologist at the Veterans Administration Hospital, Kansas City, directs research in tuberculosis which is concerned especially with the effect of certain dietary lipids and protein intake on experimental tuberculosis. From these studies a publication has appeared during the past year after presentation at a national meeting. Work has been going ahead on rapid slide culture for primary isolation of M. tuberculosis in collaboration with other groups, and it has been accepted for publication also. Investigations are being made into the prediction of sensitivity of M. tuberculosis as it is associated with enzymatic activities.

Responsibility here at the Medical Center for bacterial physiology and metabolic activities of bacteria is now assigned to a single staff member whose research activities are coordinated with members of the surgical staff in a project designed to test the relative efficacy of combinations of drugs for pre-operative intestinal antisepsis. This project is supported by a grant from a pharmaceutical company and is administered by the Department of Surgery. Other personal and special interests in this field are concerned with relationship of bacteria to surface active agents and other chemical agents with antimicrobial properties.

The head of the virology section is also chairman of the Research Committee of the University of Kansas Medical Center and has devoted continuous attention to fundamental aspects of the transplantability of tissues in collaboration with the Surgery Department and the section on immunochemistry. Six publications have resulted from this work and several students have participated in it. In 1955 a student working in this section won the Haden medal for the outstanding piece of research by a medical student and another placed second; this medal was also won by these same students in 1953. They likewise won an award from the Kansas Division of the American Cancer Society, for outstanding research in the field of "growth of normal and neoplastic tissues." The principal investigator and his colleagues won the same award for post-doctorate research in 1953 and 1954.

The main features of the above research have been concerned with effects of x-irradiation, splenectomy, injection of skin extracts, and the transplantation of multiple grafts on the skin in mice. The influence of genetic factors on the growth of homografted skin in inbred strains of mice and the role of proteolytic enzymes in the rejection mechanism of homografted skin are being studied with the support of the U. S. Public Health Service.

During the past year the American Cancer Society has sponsored a project concerning the importance of humoral factors on the transplantability of homologous tissues. At present a study is being made on the changes in electrophoretic patterns of serum proteins in homografted (skin) mice, guinea pigs, and rabbits. Also the agar diffusion method is being applied to a search for antibodies which may arise in these animals.

A project searching for methods to stimulate the growth of specific viruses in foreign hosts, especially chick embryos, has been sponsored by another pharmaceutical company during the last three years. Some of this work (on swine influenza virus) was presented at a national meeting. Specialized tissue culture techniques are also utilized in this project.

Medical students have been advised on sponsored projects as follows: (A) work on resistance of bacteria to antibiotics; (B) work on antigenic analysis of human malignancies; (C) growth of malignancies in irradiated heterologous hosts.

The areas of parasitology and virology are cooperating in research sponsored by the National Science Foundation. This investigation is concerned with the spread of GDVII virus within the host, the presence

of viral inhibitory substance in feces, and the relationship between viruses and protozoa or helminths. Antibiotic substances produced by molds also are being studied.

Research activities in the section on immunochemistry are centered upon studies on the effects of whole-body ionizing radiation on the hypersensitive state. Collaborators include Noble P. Sherwood, M.D., Ph.D., emeritus professor of bacteriology, and colleagues as well as some members of the Department of Radiology. Two students are also working on the project along with two research and laboratory assistants.

This section is also associated in a study of the immunologic aspects of skin transplantation as indicated above and in the development of techniques for sterilization and lyophilization of aortic grafts. Studies on hypersensitivity to human pituitary extract, as well as clinical and laboratory studies of patients with recurrent infections, are carried out in association with allergists on the staff of the School of Medicine.

Service rendered by the members of this department has been related to activities in the clinical bacteriology laboratory and to the training of students in medical technology in special diagnostic procedures within the departmental laboratories; here they are associated with preparation of material for instruction in class as well as research and development. Members of the staff have service responsibilities which correspond to the respective areas of teaching and research. Lectures and demonstrations are geared to diagnostic aspects. These diagnostic services, along with adequate consultation, are available to students at all levels, interns, residents, staff men associated with the Medical Center, and physicians who submit material through the mail or bring it in. Reference material is made available to doctors of the state in the fields of mycotic and parasitic diseases upon request.

Each of the staff has participated in programs of postgraduate medicine and continuation study, including the circuit courses. Speaking engagements associated with various phases of activity have been part of the service provided by members of the department. Under the auspices of the Kaw Valley Heart Association, 12 talks have been scheduled pertaining to problems of rheumatic fever, rheumatic heart disease, and preventive measures. Lectures on poliomyelitis have been presented to lay groups.

This report is respectfully submitted in appreciation of the support of the profession and the people who have presented these opportunities and for whom these responsibilities have been brought to fulfillment.

Department of Obstetrics and Gynecology

The triple function of teaching, patient care, and research in a clinical department has been, in the Department of Obstetrics and Gynecology, largely fulfilled in teaching and patient care in the past several years. Only recently has it been possible to develop a research program.

With the opening of the "D" and "F" building, this department has, for the first time, a modern hospital set-up. Always before it has been housed in various "temporary" sections of the hospital buildings. There are now 45 obstetric and 28 gynecologic beds with a thoroughly modern delivery room suite where it is possible to do cesarean sections at any time of the day or night without the delays incident to setting up the surgery suite. The out-patient section is immediately adjacent to the in-patient floor and has a total of some 14,000 visits annually. Five mornings per week are devoted to obstetrics and five afternoons to gynecology. The fourth year students are taught in these clinics at the same time they are in attendance on the hospitalized patients.

It is now possible to conduct a great deal of the teaching on the basis of "one teacher, one patient, and one student." It has been the policy in this department to change teaching methods by evolution rather than revolution. There are still a few lecture sessions (32 hours) for the second year class to introduce them to the basic anatomic, physiologic, and pathologic fundamentals in this clinical field. This is followed, in the third year, by a series of case analyses in the field. Particularly instructive past and present case histories are detailed and discussed. Each student is then ready to intelligently approach the patients he will see in his clerkship as a fourth year student. One half the class remains at the Medical Center for this practical teaching and the other half goes to the Kansas City (Missouri) General Hospital, where a staff of 12 clinical teachers conducts the teaching program. A coordinator from the Medical Center spends half his time in either place. The final oral examinations are conducted by a team of teachers from both staffs and can, thus, examine the teachers as well as the students.

The department is deeply grateful to the staff of the General Hospital who, with the part time teachers at the Medical Center, serve enthusiastically and efficiently without salary. A good teaching program without heavy expense is difficult to obtain.

This department was one of the first to become deeply interested in the postgraduate refresher and circuit course program for practitioners. The three-day refresher course, given annually, has now developed to the stage that guest speakers from various

parts of the country are not only willing but anxious to come here to participate in the program. The steadily increasing enrollment of men from Kansas and other states (one from New York, several from Texas, and one from Washington this past year) gives assurance of the appreciation of these teaching ventures.

The residency training program continues to be popular. It is being gradually increased in duration from the basic three years to about four years. Preference is given to Kansas residents, but men are also appointed from elsewhere; some of these men will subsequently locate in Kansas. Of the four men finishing this training this past year, three located in Kansas, in Wichita, Hutchinson, and Manhattan. The fourth went back to his home town, Lincoln, Nebraska.

The research effort, supported by donations of the full time staff to the Department Developmental Fund, and by grants in aid from federal agencies, drug manufacturers, and the Midwest Research Institute, has grown apace in the last few years. Four technicians and one microbiologist are currently employed. Study continues in the physiology and pathology of labor; mineral metabolism in pregnancy; pregnancy tests and testing; uterine motility; the chemical and metabolic basis of genital infection; the endocrinology of cancer and other gynecologic entities, and an extensive study of the relative merits of the protein bound iodine and the basal metabolic rate as indicators of thyroid function both in the pregnant and nonpregnant patient.

For more than a year there has been in operation an affiliation with the Osawatomie State Hospital whereby each resident spends six months on full time and is assisted two days per week by one of our full-time staff. This has afforded additional clinical material for the residents and improved care for the inmates of this hospital. While it has involved considerable sacrifice for the full-time staff of the Medical Center, it is believed to be an eminently worthwhile project. At the behest of Dr. G. W. Jackson, this program has been recently enlarged to include the Beloit Home for Girls and the Larned State Hospital.

Teaching, both undergraduate and postgraduate, is our first consideration. Proper care of a sufficient volume of patients is essential to the teaching program. Research will be conducted so far as personnel and financial support will permit. Service to physicians and residents of the state is also a prime objective.

Department of Ophthalmology

The Department of Ophthalmology has an active staff of 15 members, all of whom are certified by the American Board of Ophthalmology. Four of the staff members are half-time and the others devote one to three mornings a week to the operation of the Eye Out-Patient Department and surgery.

The Eye Out-Patient Department operates a general clinic on Monday, Wednesday, and Friday mornings. This is for the care of indigent patients. Except in the case of emergencies, appointments are to be made for all clinic patients. Insofar as possible private patients are not seen at the Eye Out-Patient Department. They are asked to make appointments with physicians directly so that they will be seen in private offices away from the Medical Center. This arrangement is desirable in order to allow staff members to devote all their time at the hospital to the training of students and residents as well as the care of clinic patients.

All new clinic patients are seen in the General Eye Clinic on Monday, Wednesday, or Friday morning and are then referred to the special clinics if necessary. The special clinics are: Field Clinic Monday afternoon, Refraction Clinic Tuesday and Thursday afternoon, and Glaucoma Clinic Thursday morning. Eye surgery is performed on Tuesday, Thursday, and Saturday mornings. Both private and clinic surgery is performed on those mornings. All clinical surgery is under the direct supervision of the attending staff. No patient is operated upon unless the resident is assisted by a staff member.

The Department of Ophthalmology has a section devoted to ophthalmic pathology which is operated in cooperation with the Department of Surgical Pathology. It is interested in processing all the eyes which can be obtained. Reports and slides of all eyes studied are returned to the referring physicians.

In order to increase the collection of teaching slides, the Department of Ophthalmology will photograph all external and fundus lesions on private or clinic patients at no cost to the physician or patient. A copy of the slide will be sent to the referring physician. Fundus and external photographs are taken on Monday, Wednesday, and Friday mornings by appointment.

A weekly Eye Clinicopathological Conference is held in the Eye Out-Patient Department at 8:30 A.M. During the months of September, October, and November the conferences are on Monday mornings; December, January, and February, Wednesday mornings; and March, April, and May, Friday mornings. These conferences are open to all physicians who wish to attend, and both private and clinic patients are seen.

The residency program is being changed to a three-year period starting in July, 1956, because of the change in requirements by the American Board of Ophthalmology. After July, 1956, there will be three residents in training at the Medical Center. Prior to

the house staff training there is a requirement of at least three months basic science in ophthalmology.

The Department of Ophthalmology at present is interested in two clinical research programs, one on the diagnosis and treatment of uveitis and the second on diagnosis and treatment of retinal separation.

Department of Otorhinolaryngology

This department contributes to the teaching program in three areas. At the undergraduate level 12 lectures are delivered to the third year medical students, and during the academic months the fourth year students attend the out-patient clinic and operating room activities in groups of six. Thirty didactic lectures are given to the fourth year students in groups of 30. The program is completed by small seminars and daily rounds.

The postgraduate program for house officers consists of the instruction of five residents who are in service the year around. Four remain at the university and one at the affiliate institution, the Kansas City General Hospital. Eight visiting otolaryngologists participate in an approved three-year residency instruction program. Basic sciences are taught along with the clinical experience but are supplemented by formal instruction periods in pathology, embryology, physiology, and anatomy. In the early spring of each year, in conjunction with the Department of Ophthalmology, a five-day postgraduate course is offered to general practitioners as well as specialists. An effort is made to give this program an appeal to both groups. During the last four days in June a postgraduate course in anatomy and surgery of the temporal bone is attended by specialists in otology. Enrollment is limited to seven applicants.

A 32-hour course is presented to graduates of the School of Hearing and Speech each autumn and embraces the anatomical and physiological principles involved in the hearing and speech mechanisms.

Each resident physician is encouraged to engage in and complete a research problem during his tour of training. The following areas have been investigated by this department or in cooperation with other departments: the role of adrenosem in the control of post adenotonsillectomy hemorrhage; the effect of neural collar; speech reception by bone conduction; surgical management of stricture of the external auditory canal; observations on the labyrinthine fluids of the dog, and rauwolfia in the treatment of atrophic rhinitis. Under investigation at present are these additional problems: the significance of recruitment in presbycusis; the effect of dehydration and hyperhydration on the auditory acuity of the cat; the prophylaxis and treatment of lye stricture; the effect of irradiation on lymphoid tissue, and a new method of adenoidectomy.

The out-patient clinic functions every week day afternoon, but private patients are seen only by appointment and must be referred by another physician.

Department of Pathology and Oncology

With the completion of the Medical Sciences Building in 1952, the former Departments of Pathology and Oncology were combined into one department with excellent facilities for teaching, research, and pathology service. The full-time senior staff of 17 pathologists and research scientists is assisted in its activities by 12 part-time pathologists, 16 residents and fellows, and approximately 50 other staff members, including research assistants, secretaries, and non-professional assistants. There are 40,000 square feet of floor space devoted to departmental activities.

The teaching activities of this department are concerned with participation in a new experimental correlated teaching program with other departments in the second year, cooperation with the clinical departments in teaching practical applications of pathology in the third and fourth years, pathology courses for nurses, physical therapists, and occupational therapists, participating in the training of medical technicians, postgraduate courses in subjects such as medical-legal pathology and exfoliative cytological diagnosis, and pathology training for residents and other physicians desiring to meet their requirements for specialization in pathology and other disciplines.

Most of the departments concerned with teaching in the second year at the medical school participated in the development of an exciting experiment in medical education which is drawing increasing national and international interest. An attempt has been made to correlate the teaching of the related subject matter from different departments by juxtaposition of their teaching in order to assist the student in his own integration of the subjects as they relate to human disease. Integrated seminars are held each week to illustrate the clinical applications of basic science information taught during the second year.

Much of the teaching of pathology is done in discussion groups of 12 students and one instructor, and the emphasis in teaching pathology has been shifted to consideration of all aspects of the disease processes as they relate to the individual patient. Some experiments with animals have been introduced into the course in an attempt to illustrate the dynamic concepts of disease processes. The increase in teach-

ing staff in pathology has permitted wider participation by pathologists in the conference teaching of the clinical services in the third and fourth years. In each of the last two years, 20 to 30 medical students have worked in the Department of Pathology as students assistants or student fellows in connection with the teaching, research, and service functions of the department. Their close association with individual staff members in such work has been an important supplemental teaching mechanism.

The number of positions for residents and fellows in the Department of Pathology and Oncology has been increased to 16, utilizing the training facilities at the Medical Center and the Veterans Administration Hospital. In recent years two trainees have been supported in the department by the National Cancer Institute and one clinical fellow by the American Cancer Society.

The cancer teaching program at the Medical School is carried on by each of the various departments concerned with the subject of cancer. The Department of Pathology and Oncology has liaison staff representation with the important clinical services connected with cancer teaching. They participate with other members of the Medical Center staff in weekly tumor conferences, reports of which are published every other month in the JOURNAL OF THE KANSAS MEDICAL SOCIETY. The cancer teaching activities of the department are assisted by grants from the National Cancer Institute and the Kansas Division of the American Cancer Society.

The principal service functions of the department are related to the autopsy service, surgical pathology, cytologic diagnosis, and tumor registry and follow-up service. The number of autopsies performed each year has remained approximately 450. The number of specimens for surgical and cytologic diagnosis has increased to approximately 8,700 per year. This increase is explained on the basis of the increase in operative surgery within the institution, the fact that all specimens from the operating room are now given surgical pathology numbers regardless of whether they are examined microscopically, and the increasing utilization of exfoliative cytology as a diagnostic aid.

The tumor registry and follow-up service collects information now on IBM cards on all patients with cancer admitted to the hospital or clinic. Regular follow-up facilities provide up-to-date information on the course of these patients. At present 7,000 cases are included in this registry. Because of the good cooperation of physicians and patients within the past five years, less than three per cent of the cases have been lost from this follow-up service. This registry and follow-up service has been recommended as a model by the American College of Surgeons and copied by other institutions in the country. Copies of the annual report of the tumor registry and follow-up service may be obtained on request. In recent years the tumor registry and follow-up service has been supported by the Kansas Division of the American Cancer Society. With the aid of a grant from the National Cancer Institute, the department has been preparing 12 sets of pathology material on tumor cases which are being distributed to pathologists in this four state area.

The Department of Pathology and Oncology has one of the largest active research programs of academic pathology departments. Productive research has been completed or undertaken in the fields of histochemistry, ultraviolet cytochemistry, biochemistry, protein and physical chemistry, sero-diagnostic testing, electron microscopy, audioradiography, radioactive tracers and pathologic physiology, endocrinology, tissue culture, microbiology, cancer biology, exfoliative cytologic diagnosis, and cancer statistics. Although much of this research is related to the structural, chemical, and physical changes in normal and neoplastic tissue constituents, there has been an increasing development of research in other areas. The results of these research activities are continuing to be presented at national and international meetings and published in scientific periodicals. In the absence of support of research relating to the pathology of human diseases by the Kansas legislature, this research has been made possible by the donations and bequests from private citizens and grants from the Kansas Division and national organization of the American Cancer Society, the National Institutes of Health, the Atomic Energy Commission, and the Damon Runyon Memorial Fund for Cancer Research. Six research fellows have been supported by the National Institutes of Health, the American Cancer Society, the Damon Runyon Memorial Fund for Cancer Research, and the American Heart Association.

Although the members of the department recognize that our first responsibilities are in the area of teaching, service, and research at the Medical Center, we also feel an obligation to participate in the betterment of our discipline. Members of the staff continue to serve as consultants to various state agencies and organizations, to national organizations of pathologists, and to national groups such as the U. S. Public Health Service, the Atomic Energy Commission, and the American Cancer Society.

Department of Pediatrics

The Department of Pediatrics believes that *learning* is more important than teaching, both for professors and students. Those of us who are designated as professors are concerned with providing the best

possible learning opportunities for students, house staff, and ourselves. The following paragraphs describe briefly the physical plant wherein some of our learning opportunities are located, the kind of learning opportunities that have been developed in this department, and some of the tangible results therefrom.

Physical Plant. The Department of Pediatrics has its headquarters in the Children's Pavilion, built in 1936, which is attached to the main hospital at the University of Kansas Medical Center. There are 73 beds for children in the pavilion; through affiliation with the General Hospital and the Children's Mercy Hospital of Kansas City, Missouri, there are another 30 and 120 beds, respectively, for children. There are 40 bassinets at K.U.M.C. and 20 at General Hospital assigned to pediatrics. All three hospitals run large out-patient services for children, totaling some 35,000 to 40,000 visits a year. These facilities are adequate for the present number of students. Any increase in students or decrease in facilities would seriously restrict the program of the Department of Pediatrics.

Medical Service to Patients. Children are admitted to the Pediatric Service at K.U.M.C. up to the 15th birthday. This age, however, is not rigidly adhered to. The final decision is based on the maturity of the individual. Infants and children can be and are admitted to the Pediatric Service without regard to complaint, race, creed, social or economic status. The Pediatric Service is cognizant of the importance of dealing with children as children and not just as problems in this or that disease. Consequently it makes every effort not only to create a friendly attitude toward children and their parents but also to administer to all their needs, not just those for which they might have come. Particular attention is paid to the adjustment that children make to hospitalization and the adjustment of parents to their sick child and his problems.

Medical Students. Junior students are assigned to this department, one-third of the class at a time for about 11 weeks each. Half of each group are assigned to Children's Mercy Hospital and General Hospital, the other half to K.U.M.C. There is no rotation of students among the three hospitals. The program for the students is approximately the same regardless of their hospital assignment.

During their 11 weeks on pediatrics at the Medical Center, medical students work on the wards and in the clinics and nurseries, taking histories and examining patients. Besides the general pediatric clinic, they work in the special clinics, such as well-baby, allergy, cardiology, and child psychiatry. The students are assigned patients in rotation on wards and in clinics and do simple laboratory procedures on their hospital patients. Their histories, physical examinations, and knowledge of their patients are checked by the staff.

The students are part of the Pediatric Service while they are clerks and attend daily ward rounds with the staff and all staff meetings, including conferences held jointly with the Departments of Roentgenology, Surgery, Pathology, and Obstetrics; in the latter all stillbirths and neonatal deaths are covered. In addition, they attend, along with the rest of the staff, the weekly staff conference covering medical problems in pediatrics, the weekly conference conducted by the child psychiatrists, and weekly sessions held at the Children's Convalescent Center. In addition, each senior staff member holds seminars for the student clerks on pediatrics in the field of his specialty. These last one hour a day throughout the week until the subject matter has been covered and include the following: growth and development, infectious diseases, cardiology, child psychiatry, nutrition and metabolism, allergy, communicable disease and public health, newborn, accident prevention, hemolytic disease of newborn, renal disease, school health.

Certain goals are set for the student while he is on the Pediatric Service. It is hoped that he will: (1) learn how to recognize the highest quality of pediatric practice; (2) learn that parents of sick children are almost always disturbed people during the child's illness; (3) begin to learn how to evaluate information obtained from parents; (4) learn that there are other things in a child's environment besides viruses and lack of calories, vitamins, and minerals that produce ill health; (5) acquire as much factual information about the health problems of children as he is capable, but above all, learn *how* to obtain information from various sources that can help him in his study of health and disease.

Medical students are assigned in groups of three or four to one of the full-time staff during their 11 weeks on the Pediatric Service, in order that the student may go to some one person to secure help with any particular problem and in order that the staff may gain more first-hand knowledge of the progress being made by each student. Evaluation of the student's progress is made from day to day by those with whom he comes in contact. At the end of the 11 weeks an oral examination is given. There is rarely a significant discrepancy between the results of the oral examination and the day-by-day evaluation.

Research Activities. Research is a vital part of the learning process, albeit a special type of learning, because those doing it are hoping to extend the frontiers of knowledge. Many things can be described as research. The following paragraphs list some of the research activities going on in this department.

The laboratory unit for research in vital diseases

was established in 1946. From a modest beginning in a single room with space to house 20 monkeys, and with the assistance of a single technician, the unit at the present time occupies the entire fourth floor of the Hixon Laboratory. At work within the unit are 24 individuals; there are three physicians, a geneticist, a veterinarian, a secretary, 10 research assistants, and eight laboratory assistants. The animal space, occupying approximately one-third of the fifth floor of the laboratory, has facilities to care for 132 monkeys and several hundred small animals. In addition, there are well-equipped rooms for washing and preparing glassware for inoculating, and for performing postmortem examinations of infected animals.

From its beginning the laboratory has depended for fully 90 per cent of its research support from grants-in-aid from private and government sources. The total amount received in grants-in-aid during the past nine years is somewhat more than $750,000. The salaries for personnel necessary to the conduct of the research and in support of several young pediatricians associated in research and in clinical pediatrics have come from these sources. Likewise, the salaries in support of research assistants have come largely from those funds obtained outside the university. Large expenditures have been made for basic equipment necessary for the extension of the research effort. The laboratory is well equipped for extended research in the field of virology.

One of the major interests of the laboratory has been poliomyelitis. The laboratory has been engaged in a cooperative effort with three associated laboratories in delineating the three known immunologic types of poliomyelitis viruses. In 1951 the laboratory was asked to prepare a large amount (20 liters) of standard antisera against the three known types of poliomyelitis viruses. With the completion of this project the sera were stored at the University of Kansas. Since then, portions of it have been sent to laboratories located in many parts of the world. These sera were an essential reagent in the laboratory phase of the 1954 poliomyelitis vaccine field trials.

When these projects were finished, the laboratory began a study to find strains of poliomyelitis viruses which were modified in their pathogenicity for human beings. The plan was to feed the attenuated viruses to human beings in an effort to provide enduring immunity. At the beginning these studies were interrupted by the vaccine field trials. For the ensuing 18 months our technical facilities were engaged in studying the antibody response of more than 11,000 children participating in the program. During the course of the evaluation study this laboratory served as liaison between the other 27 participating laboratories and the Poliomyelitis Evaluation Center under the direction of Dr. Thomas Francis at the University of Michigan. During this period also several studies on the development and persistence of antibodies in clinical cases of poliomyelitis were carried out. At present, studies are being conducted in (a) the movements of poliomyelitis virus in the body milieu, (b) the ways whereby virulence can be taken away from poliomyelitis virus.

Dr. Daniel C. Darrow, Children's Mercy Hospital professor of pediatrics, has been here for little more than a year. During that time he has begun two projects whose solution will contribute to our understanding of nutrition in children. One of them is technically difficult and consists in measuring the specific gravity of infants and children. This has been done in adults but not in children or infants. Once this has been accomplished, it will be possible to measure the amount of fat and other non-fat tissue in the child's body. The other project deals with iron-deficiency anemia, of which there is a large amount in this area, some of it serious. Both of these projects are fully supported by grants-in-aid from private and federal sources.

A member of the pediatrics staff who also serves as medical director of the Children's Convalescent Center has carried forward a large study on the prevention of rheumatic fever among children in the center who have had at least one previous attack. To date he has accumulated 3,000 patient-months of study, using long-acting parenteral penicillin without a recurrence. This project is also supported by private research funds.

Studies on neonatal respiration have been going on here for the past five years and are continuing. Several projects are now under way concerning (1) the effect of hypoxia on somatic and respiratory activity of the newborn, (2) measurements of minute and tidal volume according to respiratory rate, (3) weight loss in relation to respiratory rate.

All residents are encouraged to undertake research projects if they so desire. One resident house officer has been particularly interested in the differential diagnosis of jaundice in infants and has reviewed our experience here with atresia of the bile ducts and obtained some interesting and helpful findings. Another is working on a problem in the newborn as outlined above. Two have combined their efforts to investigate methods for prevention of crises in sickle-cell anemia.

The activities described above may seem to some like an over-extension of purpose for a single department. If so, then one should consider the alternative, which would be to reduce activity. A reduction in activity could be accomplished by (1) a reduction in personnel or (2) by requesting the present personnel

to change their interests. A simple reduction in personnel would necessitate reverting to lecture-type teaching. The lecture system is better than nothing, but it is far inferior to the present program in pediatrics, in which the student and professor meet at the patient's bedside. The second alternative, asking the present personnel to change their interests from learning, including research, to simply teaching, is untenable, as it would destroy the basic philosophy by which the department lives and operates.

Department of Pharmacology

The staff of the department has recently been enlarged and consists of six full-time and five part-time members. The major formal teaching activities of the department consist of a course in the second year of the medical curriculum, best described as dealing with the pharmacological basis of therapeutics, and a conference course in clinical pharmacology in the fourth year.

The second year course involves 68 hours of didactic instruction, 40 hours of laboratory, and 20 hours of discussion in small conference groups. Drugs used in the chemotherapy of infectious disease are considered at a time which permits close integration with related material in microbiology. The remainder of the course is concerned with drugs used in the therapeutic management of non-infectious disease.

Geographical and temporal separation prevents integration of this latter part of pharmacology with material taught by the Departments of Physiology and Biochemistry. As an alternative, it is presented late in the second year to provide temporal integration with introductory clinical subjects. In the course every attempt is made to present the proper clinical uses and the hazards of drugs as a logical development from existing knowledge concerning their pharmacological action at all levels of biological organization, their mechanism of action, and their disposition by the mammalian host. Laboratory experiments are designed to illustrate the actions of drugs and their mechanism. The teaching laboratory has been re-equipped and its facilities modified to permit execution of experiments by the students themselves, rather than by the staff as demonstrations. Results of experiments are presented by the students and are discussed and related to didactic work in informal conferences where each instructor works with a relatively small group of students.

Weekly, multi-disciplinary, integrated seminars of the second year curriculum provide an additional opportunity for presentation of pharmacological material as it relates to various medical problems.

Conferences are conducted in clinical pharmacology which involve one-eighth of the fourth year class at one time. These deal with the use of drugs in individual clinical situations and place emphasis upon proper selection of drugs, drug preparations, and dosage in prescription writing.

The Department of Pharmacology also participates in those teaching programs of the Department of Postgraduate Medical Education which are concerned with or include discussions of drugs used in therapeutic management of disease situations.

A program of graduate training leading to the degree of Doctor of Philosophy in Pharmacology has been organized with the graduate school. The program is open to qualified college graduates and to physicians who desire an academic career with pharmacology as a major field of interest. Advanced courses in pharmacology are being formulated for this program in which several graduate fellowships are available, and in which the conduct of an original laboratory investigation is a prime requirement.

A major research interest of the department is in the relatively new area of chemical and biochemical pharmacology, which deals with the mechanism of action and behavior of drugs at the level of cellular metabolism, and with the basic cellular mechanisms responsible for the dissipation of drug action through metabolic alteration and excretion. These basic approaches are currently being applied in three research programs dealing with the cellular mechanism of renal tubular transport of drugs and metabolites, particularly organic bases and monosaccharides.

Since the renal tubular cell serves as a relatively accessible model, information derived from such studies should contribute not only to existing knowledge concerning mechanisms of renal tubular excretion and reabsorption, but also concerning mechanisms whereby drugs are transported across other cells, to sites where they exert beneficial or harmful pharmacological effects. Extension of the approach to other drugs and other physiological processes is contemplated.

Physical modification of research laboratories, including construction of a refrigerated laboratory for use in preparing tissue fractions and enzyme preparations, has been completed. These and a re-equipment program are designed to provide optimal conditions for research in chemical and biochemical pharmacology and for the training of graduate students in this area of investigation.

Department of Physical Medicine

General Organization. The Department of Physical Medicine is composed of the following sections: medical, physical therapy, occupational therapy, and

an educational section responsible for the training of student physical therapists and student occupational therapists.

The *Medical Section* consists of a director, assistant director, and two instructors in physical medicine. Their responsibilities include the direction and supervision of all treatment carried out in the department, the care of the in-patients assigned to the Physical Medicine Service, consultative service to the other clinical departments, and active participation in the teaching program of physical and occupational therapists, the nursing department, and medical students, and participation in the postgraduate medical education program for the training of resident physicians in the specialty of physical medicine and rehabilitation.

The *Physical Therapy Section,* under the direction of a chief occupational therapist and five staff therapists, provides a service facility in the areas of general medicine and surgery, physical disabilities, pediatrics, tuberculosis, psychiatry, and cerebral palsy.

The *training course in physical therapy* is conducted on both the Lawrence and Kansas City campuses. Two courses are offered: one, a four-year course leading to the degree Bachelor of Science in Physical Therapy, and the other a 12-month course leading to a Certificate of Physical Therapy. Preprofessional training is given on the Lawrence campus and professional training on the Kansas City campus. Affiliation is maintained with several hospitals in the Kansas City area and with the local Veterans Administration Hospitals where adequate facilities are provided for clinical training under careful supervision.

The *training program for occupational therapists* is also carried out jointly by the Lawrence and Kansas City campuses. Administratively, the five-year course is conducted by the School of Fine Arts of the University of Kansas and leads to the degree Bachelor of Arts. One semester of the training program for occupational therapists is carried out on the Kansas City campus. Extensive opportunities are available at various training centers over the United States for affiliate training in tuberculosis, psychiatry, physical disabilities, general medicine, surgery, and pediatrics. The occupational therapy section of the Medical Center is approved for affiliate training in several of these areas.

The *In-Patient Service* of the department has seven beds. Patients who present problems primarily of rehabilitation are candidates for treatment on this service. A limited out-patient facility exists for the purpose of providing a treatment service to patients who are seen in the out-patient clinic of the Medical Center as well as the treatment of occasional patients as a convenience to physicians in private practice who do not have facilities for treatment enjoyed by this department. In connection with out-patient activities, there is active participation in the Cerebral Palsy Clinic from evaluation as well as treatment aspects.

SPECIFIC AIMS AND PURPOSES OF THE DEPARTMENT

Medical. Each of the physicians on the staff of this department has received special training in this medical discipline. The director and assistant director are diplomates of the American Board of Physical Medicine and Rehabilitation. The purpose of medical direction of the department is to provide other staff physicians with as much aid in the management of their cases as possible, also to provide a more direct and continuous supervision of the treatment procedures carried out. The Physical Medicine In-Patient Service provides an excellent training medium for the nursing and practical nurse programs in that much of the care of those individuals afflicted with chronic disease and disability must necessarily devolve to these individuals.

The correlation of medical and physical management of such patients is another important part of the training of medical students and resident physicians for future responsibilities. The integration of the physical problems with those which necessarily arise at the community and social levels after the individual has been dismissed from the hospital constitutes a real challenge for the development of this neglected phase of medical practice.

Research activities of this section have been directed into several channels: the effect of ultrasound on the threshold of perception of vibratory stimuli, the effect of ultrasound on reaction time to a standard neuromuscular stimulus, the effect of ultrasound on the electrical resistance of skin, and the effect of ultrasound on the reflex response to painful stimuli; the development of strength as a learning process, the five-second exercise bout; the rehabilitation of the hemiplegic individual by procedures which can be employed in the home. All of these topics represent separate areas of investigation which are either in process at present or have been recently concluded.

The *physical therapy* section has treated a total of 1,081 patients who made 12,325 total visits during the past year.

To the *occupational therapy* section 702 patients have been referred this year with a total of 6,711 patient visits.

In the *educational section* two classes each of physical and occupational therapy students are enrolled during the academic year. An average of 15 students in each of the fields of physical therapy and occupational therapy is enrolled each semester. Even though this represents a fair number of students who

are being trained in these important ancillary fields, active recruitment efforts must necessarily continue as the need for properly trained individuals is far in excess of the current supply.

The *Residency Training Program* in physical medicine and rehabilitation is approved for a three-year training period by the Council on Medical Education and Hospitals of the American Medical Association and the American Board of Physical Medicine and Rehabilitation. This involves a training program of ascending responsibilities. A formal training course in the technical aspects of this field is given during the first year of training. Training in basic sciences is provided through affiliation with the Departments of Anatomy and Physiology. Training in other aspects of rehabilitation is available through affiliations with other special areas of training. Clinical training centers around the many patients seen in this department for diagnosis, evaluation, and treatment. Attendance and active participation in the many conferences and meetings conducted by other departments of the Medical Center are encouraged. It is hoped that a type of reciprocal training of physicians in the other specialty areas can be equally encouraged.

The number of physiatrists who can be trained adequately is necessarily limited; one physician in each of the three years of training will receive good training and a well rounded experience. The need for physiatrists in the many areas in which physical medicine and rehabilitation can function is acute, and the opportunities for physiatrists far exceed the supply.

FUTURE PLANS FOR THIS DEPARTMENT

Work will continue in the three primary areas of teaching, research, and service. Developments in teaching and research are limited only by the amount of time available. The extensive remodeling program now in progress will facilitate more efficient treatment under working circumstances which should be more pleasant to patients and personnel alike. It is hoped that additional facilities can be developed for the management of those individuals who have been stricken with catastrophic illness or physical disability, since the numbers of such individuals are increasing and the problem of chronic disease and disability is becoming more pressing.

A better program of rehabilitation can be realized by a closer affiliation with other special agencies and services and the development within the institution of a more practical means of the realization of the true meaning of rehabilitation—to restore or to give back. The greater the extent of the physical disability, the more difficult it is to provide for the needs of the patient by the usual medical procedures.

Our hopes are for the development at this center of a program for the more effective solution of rehabilitation problems to the end that those individuals, currently being trained, will be able to develop additional programs, in whole or in part, in the communities in which patients reside. The development of such a pilot program is initially expensive, and additional funds must be sought if this aim is to be realized. These problems will not be resolved within the next year or next few years, but steady progress should result if this goal is kept in mind.

Department of Physiology

The activities of the Department of Physiology on the Lawrence campus are concerned with the teaching of first year medical students, of college students at all levels, and of graduate students in physiology and other areas. An active research program is progressing through the combined efforts of the six full-time staff members and the graduate students.

One of the faculty has recently received a three-year Lederle Medical Faculty Award, and another holds a Watkins Faculty Scholarship for the summer of 1956. In addition, two graduate students are on fellowship appointments; one is a Rockefeller Fellow from India, and another is a United States Public Health Service Pre-Doctoral Research Fellow.

All members of the department play a major role in participating, along with the Departments of Anatomy, Biochemistry, and Psychiatry, in teaching the first year of medicine. Freshman medical students are taught, in the first year, the structure and function of the normal human organism, not in a series of separate courses divided among the departments, but, insofar as possible, as a single full year's integrated program. Particularly close is the correlation between the structure and function of the nervous system and between the biochemical and physiological aspects of body function.

A variety of college level courses in physiology is taught in order to serve the needs of students in pharmacy, physical education, physical therapy, occupational therapy, and majors in other related departments, as well as those students who are interested in human physiology as part of a broad liberal education. In addition, the department participates, along with the Departments of Anatomy and Biochemistry, in an integrated course in the Foundations of Human Biology for third year nursing students.

A graduate training program is offered which leads to M.A. and Ph.D. degrees. Along with the more general graduate courses, there are available more specialized courses at the graduate level, such as the advanced physiology of the cardiovascular system, advanced neurophysiology, special physiology of the gastrointestinal tract, and physiology of the special senses.

The diversity of research interests among the staff members is illustrated by the nature of some of the current projects, including a study of the hemodynamics of the cardiovascular system and the effects of drugs upon them in the normal animal and in animals with experimentally produced atherosclerosis. This project is aimed at furthering basic understanding of cardiovascular function and studying dynamic changes produced by the progressively developing atherosclerotic process. Results indicate that characteristic changes in the function of the vascular system may be diagnostic in early stages of atherosclerosis.

Another area of study concerns the mechanisms of anaphylactic shock. This project involves a study of the release of heparin or heparin-like substances into the blood during shock, the similarities and differences between anaphylactic shock and histamine shock, and the role played by various plasma protein fractions in the sensitization of animals to whole blood plasma.

In neuromuscular physiology, two specific problems are the mechanism of action of anti-convulsant drugs and the control of activity of the tracheal musculature.

In the field of metabolism, the effects of various fatty acids upon carbohydrate metabolism and their pharmacological effects upon the central nervous system are being studied. In addition, plans are formulated for a future study of the effects of trypsin on bone metabolism and on calcareous secretion in general.

Two long-unsolved problems in physiology are being attacked. The first concerns detailed mechanisms involved in visual accommodation, and the second is a study of the mechanisms which control hunger and appetite.

One departmental member is particularly interested in the general field of biophysics with special emphasis on the application of electronics to biophysical research. He is at present working on the development of a method for electronically recording the instantaneous output from either ventricle of the heart. Such a method would make available information about cardiac output and its control which presently available methods do not afford.

Much of the progress in medical research today depends upon the use of biophysical methods and upon an understanding of the biophysical properties of the living organism. Biophysics as a field of endeavor is far less well-defined than is biochemistry; like biochemistry, however, it stems from and is closely related to physiology. Much of the research being done in the department at present is oriented along biophysical lines. It is planned to further extend the work of the department in this direction. There is no unanimity of opinion as to what constitutes adequate training in biophysics, nor indeed as to the content and limits of this field. It is believed that a Department of Physiology can and should contribute strongly to the training of people interested in this area.

Department of Postgraduate Medical Education

OBJECTIVES AND NATURE OF THE PROGRAM

Medicine has become so complex that it is obviously not possible to present a completely detailed and sustaining knowledge concerning every medical and related discipline within a four-year period. In addition, new discoveries of value to the practicing clinician continually are being made. Consequently, the four-year medical course, internship, and even residency supplies merely the foundation for a lifelong study of medicine. Such study, aimed at acquiring new knowledge and skills, as well as refreshing former ones, is postgraduate medical education.

Postgraduate instruction at the University of Kansas School of Medicine was at first directed largely to general physicians. Now, teaching is directed to physicians interested in general medicine and surgery as well as those interested in specialties and subspecialties, such as anesthesiology, cardiology, chest diseases, gastroenterology, hematology, obstetrics, etc.

Refresher courses, continuation courses, correspondence courses, and in-residence training are available. Refresher courses are one- to five-day courses, given at the Medical Center by the School of Medicine faculty and distinguished teachers from other medical schools. About 60 per cent of the instruction is by lecture and seminar; 40 per cent is given in ward walks, small discussion groups, live clinics, and actual laboratory experience. Each day of instruction comprises seven clock hours, making an average of 21 hours in session per course. All appropriate teaching methods are used, including the comparatively new audiovisual teaching aid—closed-circuit television. Refresher courses are offered also to such paramedical groups as medical technologists and nurses. Eighteen courses of this type were presented last year.

Continuation courses are those offered in sessions lasting one-half day to one day each week or each month over a period of time. Such a schedule makes it practical for physicians in active practice to attend without absenting themselves from their practice for several days. Continuation courses of the circuit type offer six hours of instruction at afternoon and evening sessions, one day each month, November through April, at centers throughout Kansas. The Kress Foundation grant has made it possible to expand the num-

ber of centers from eight in 1950-51 to eleven in 1954-55, thus reaching many doctors who had not been able to attend previously. The programs for each center are presented on the same day of the week each month. They are conducted by a team of three faculty members, including clinicians and basic science teachers. In addition to didactic instruction, there are clinicopathological conferences and live clinics.

For the past two years, correspondence study courses in basic and advanced electrocardiographic interpretation have been offered. They give the physician an opportunity for practice in the interpretation of electrocardiograms. More correspondence study courses in appropriate subjects are being developed. Possibly in some instances, such courses will either begin or conclude with a one-day session at the Medical Center in order to increase their usefulness.

In-residence training is offered by special arrangement with the chairman of the department concerned and with the Department of Postgraduate Medical Education. Physicians may spend varying periods of time, for example from one week to nine months, on the wards, in the laboratories, and in conferences and seminars in order to increase their competence in various aspects of medical practice. There has been an average of ten enrollments each of the past five years in this training.

Summary of Activities—July 1, 1955 to January 1, 1956

Enrollment:	Doctors	1,059
	Nurses	286
	Lay Persons	292
	Total	1,637

Courses: There are 20 courses of the refresher type, three of the continuation type, three conferences and seminars, and four correspondence study courses scheduled for 1955-56. The six-months circuit course is being presented this year at 11 centers throughout Kansas.

Enrollment for refresher courses this year has shown a substantial increase. The internal medicine course recorded an increase of more than 100 per cent, when compared with registration last year. Enrollment has decreased somewhat in the six-months circuit course.

Summary of Activities—July 1, 1954 to June 30, 1955

Enrollment:	Doctors In-State	1,042
	Out-of-State	894
	Technicians	157
	Nurses	310
	Lay Persons	515
	Total	2,918

Courses: There were 18 courses of the refresher type, three of the continuation type, five seminars and conferences, and three correspondence study courses; the six-months circuit course was offered at 11 centers throughout Kansas and Missouri. The schedule of courses included three that represent a new type of program or fields in which training had not been offered previously. These were: surgery—operative clinics, a full-day program offered one day each month for a term of four months; the pathology of crime, a two-day course for the medical profession and the law enforcement officer; and industrial and occupational medicine, a three-day course for the doctor in general practice and the industrial physician or surgeon. Four different programs were provided for the lay public during the 1954-55 year.

DEPARTMENT ORGANIZATION

The work of the Department of Postgraduate Medical Education at the University of Kansas School of Medicine is directed by Dr. Mahlon Delp, who is assisted by Dr. Jesse D. Rising. The full-time staff, charged with the responsibility of the promotion and administration of the program, includes an executive director, two field representatives, a secretary, and a registrar-bookkeeper.

CONSIDERATIONS FOR THE FUTURE

During three of the past four years, this department has had the largest enrollment of physicians in refresher, circuit, and continuation courses of any school in the United States and Canada. During the school year 1954-55, one physician enrollment in every nine in the 92 schools of North America was in the Postgraduate Department at the University of Kansas School of Medicine.

Assuming that the foundation has been laid for a sound and well-balanced program of postgraduate medical education, it is appropriate to give attention to: (1) an evaluation of the effectiveness of our present program, and (2) new teaching ventures and techniques.

EVALUATION OF PRESENT PROGRAM

A beginning has been made in the establishment of certain standards or a base line in regard to postgraduate medical education for physicians of the midwest region. One of the methods is a statistical report from each doctor in a given area. A statistical questionnaire has been used as one method of gathering needed information for doctors in general practice, in specialty practice, or in group practice. Plans are being made to evaluate each program offered by this department during the coming year.

NEW TEACHING VENTURES AND TECHNIQUES

General practice residencies throughout the country are in constant change due to the fact that few medical schools have a Department of General Practice. With the cooperation of the other departments of the University of Kansas School of Medicine, a realistic attempt can now be made to promote and foster a residency in general practice.

Numerous hospitals in this region are now qualified for internships if their programs are built upon a foundation of affiliation with an accredited teaching institution. We want to explore this area further.

The headquarters office for the American Academy of General Practice is located in Kansas City, Missouri. This office represents the heart of this large medical organization, a group which has had an effective influence in the promotion and growth of postgraduate medical education throughout the country. It is desirable that the department cooperate closely with this organization on any sound postgraduate program.

Educational programs in medicine for lay persons have been explored by this department in past years, and the need is great. The university has a definite obligation to foster such teaching.

Our programs to date have been arranged and presented to a regional group for the most part. An examination of registration statistics during the past two years shows an enrollment which has expanded to beyond what normally would be expected from a regional coverage. Departments within the structure of the medical school have such exceptional talents for teaching that it seems only logical to develop certain programs on a national basis. The Department of Pathology and Oncology, for example, has an exceptionally strong faculty capable of presenting a course in histochemistry. By so doing, this department can offer training in fundamental research which is difficult to secure in this country. Just such a program is being planned for June of 1956. A similar venture in cardiovascular disease could easily be carried out by the Department of Medicine.

In the past an occasional one-day symposium has met with good acceptance. This type of program is popular and, although expensive, should be expanded.

Innumerable requests for speakers have come from county medical societies to the administration and to the Department of Postgraduate Medical Education. These requests regularly come from Oklahoma, Kansas, Nebraska, Iowa, and Missouri. The organization of a speakers' bureau by this department seems necessary in order to more effectively carry out this function.

In recent years, it has become increasingly apparent that a medical school, if it is properly to fulfill its obligations to the medical profession and to the public, must offer not only the basic four years of undergraduate medical training but must also accept responsibility for providing physicians with opportunities for high quality postgraduate education. The people of Kansas can take pride in their medical school for the manner in which it has accepted this responsibility and become a leader in the field of postgraduate medical education.

Department of Psychiatry

In 1948 the beginning of a modern psychiatric program at the University of Kansas was described in the JOURNAL OF THE KANSAS MEDICAL SOCIETY.* Since then considerable progress has been made in some areas, although the program has lagged in others. Staff development and the undergraduate teaching of psychiatry have proceeded quite well. Beginning with only one full-time teacher of psychiatry in 1948, there have been added five full-time teaching positions for psychiatrists, plus two for psychologists and two for psychiatric social workers, all of whom participate in the teaching program. In addition, there are two part-time** psychiatrists and 30 voluntary attending or consulting staff members.

Since July 1, 1953, when the division of neurology was separated from psychiatry to become a division of the Department of Medicine, the department has been designated simply as the Department of Psychiatry. Its clinical and teaching functions are now carried out through four sections, the In-patient Section, the Out-patient Section, the Psychosomatic Section, and the Child Psychiatry Section, each headed by a full-time faculty member. The growth of the teaching staff has been paralleled by an increase in the number of teaching hours and by improvement of the teaching in all four years of the undergraduate curriculum.

Development of the physical facilities of the department, of postgraduate training in psychiatry, and of research work has not kept pace with progress in other areas. Planning for a new building, to provide adequate facilities for the in-patient and out-patient care of psychiatric patients, has been under way since the 1949 session of the state legislature appropriated funds to be used, together with Hill-Burton funds,

* Roth, W. F., Jr.: The Psychiatric Program of the University of Kansas Medical Center, J. Kan. Med. Soc. 49: 241-243, (June) 1948.

** The term "part-time" designates a staff member whose principal office and work is not at the Medical Center but who devotes a considerable percentage (10 per cent or more) of his working time to the teaching program. The amount of time spent in teaching is the chief point of differentiation between a "part-time" and an "attending" staff member.

for the construction of such a building. Unavoidable delays have postponed the fruition of these plans. However, construction of the new building for psychiatry was finally started in September, 1954, and is nearing completion at this time. Its availability for use during the current year is regarded as a certainty. When it is in full operation it will provide facilities for the care of 40 additional bed patients (total of 65), for 30 to 40 "day hospital" patients, and for a much larger and more efficient out-patient service. Moreover, the additional space and modern facilities will greatly assist the teaching program and will make possible a satisfactory development of the postgraduate training program and research.

THE UNDERGRADUATE TEACHING PROGRAM

The general objective of the psychiatric curriculum is to teach psychiatric principles universally applicable to medical practice. Relatively little emphasis is placed upon the problems of psychiatry as a specialty. Some specific goals of the teaching program are to help the student learn:

1. The essential facts of normal personality development, structure, and function.

2. The basic principles of psychopathology, personality reactions to internal (somatic) and external (environmental) pathological or stress situations, and the various special types of psychopathologic reactions.

3. How to recognize a psychiatric problem when he sees it (even though the presenting feature may be an emotional reaction masquerading in a cloak of somatic symptomatology), and what to do about it, which requires familiarity with Item 4.

4. How to talk to a patient, to take a meaningful life history, and to appraise the present status of the patient's mental functioning, his personality assets and liabilities, his treatment needs, and his potentialities for response to therapeutic measures.

5. Some practical skills in simple, supportive psychotherapy; how to treat patients with emotional problems and anxiety-based symptoms, for whom this type of treatment is appropriate.

6. To know how he may and when he must utilize specialist personnel and community agency resources to assist him in dealing with the more complex and difficult diagnostic and treatment problems.

A summary outline of the undergraduate teaching by the Department of Psychiatry is given in Table I. This shows the total number of hours of psychiatric teaching in the regular, required course of the medical school. It indicates all teaching done by members of the Department of Psychiatry, both in time assigned specifically to the department and in courses and clerkships of other departments. In addition to the regular curriculum, there is a psychiatric film (movie) course of approximately 20 hours (open to all students in the second, third, and fourth years);

Table I. *Summary of Undergraduate Psychiatry Curriculum, Showing All Teaching Hours*

1st Year—Dept. of Psychiatry:	(a)	Lectures	63		
	(b)	Conferences	20	83	83
2nd Year—Dept. of Psychiatry:	(a)	Lectures	15		
	(b)	Group Discussions	15	30	
Physical Diagnosis:	(a)	Lectures	2		
	(b)	Clinical	10	12	
Integrated Seminars				2	44
3rd Year—Dept. of Psychiatry:	(a)	Lectures	36		
	(b)	Clinical ("clerkship")	36	72	
Dept. of Pediatrics:	(a)	Lectures	10		
	(b)	Clinical work with patients	26		
	(c)	Case conferences and seminars	24	60	
Dept. of Medicine		Psychosomatic Rounds		12	144
4th Year—Dept. of Psychiatry:	(a)	Treatment Seminars	16		
(Out-Patient Clinic)	(b)	Clinical work with patients	24		
	(c)	Diagnosis and Disposition seminars	20	60	60
Total Hours in Regular Curriculum, All Four Years					331 hours

and elective clerkships are offered in all of the sections of the department. Some details regarding the teaching in each of the four years are given in the following paragraphs:

First Year. A series of lectures throughout the "Integrated Freshman Year" course are given by members of the Department of Psychiatry. The lectures are supplemented by discussion periods, for which the class is subdivided into groups of 20 to 25 students, each led by an instructor. Normal personality development and structure, the anatomy and physiology of intellect and emotion, and the interrelationships of mind and body in the functioning of the several organ systems constitute the subject matter of this phase of the teaching in the first year.

Second Year. In the course on physical diagnosis two lectures are devoted to the subject of interviewing, while practical methods of dealing with patients are discussed and demonstrated in the "laboratory" sessions, in the out-patient clinic. A few weeks after the instruction in general pathology has gotten under way, and at about the time the course in physical diagnosis starts, weekly sessions of the course in psychopathology are begun. This course comprises 15 two-hour sessions, each consisting of a one-hour lecture to the entire class followed by a discussion period during which the class is divided into 10 equal groups, each meeting in a separate room with its own instructor. Building upon the foundation of the previous teaching concerning normal personality structure and function, the lectures describe the evolution of maladaptive mechanisms and the part played by environmental pathology in personality maladjustment. Special attention is given to life situations in infancy and childhood which produce or lay the groundwork for later frank psychopathology.

In the discussion groups, where each student has an opportunity to express his reactions to the material presented in the preceding lecture, there is free discussion and interchange of ideas. The student may learn that emotional experiences, which he previously had regarded as peculiar to himself, are commonly (if not universally) experienced by others. Such an experience appears to lessen emotional resistance to new (to the student) concepts of mental functioning and to allow the material of the lecture to become a usable part of the student's knowledge and experience. In other words, the discussion groups lead to a better understanding and assimilation of the subject matter, and to consequent increased ability to use it in clinical practice.

Third Year. Now that the student is fully embarked in clinical work, his psychiatric instruction is centered about the clinical material he sees in the course of his medical and pediatric clerkships as well as during the week he is assigned to the psychiatry ward. During his time on the pediatrics service he is introduced to psychiatric problems commonly encountered among children. In the course of his medical clerkship he gets instruction in psychosomatic medicine. On the psychiatry ward he gets an overall view of the functioning of an intensive treatment unit and experience in taking psychiatric histories and in making psychiatric examinations. Throughout the year, at weekly lectures, the entire range of psychiatric problems encountered in practice is discussed, with case demonstrations when appropriate.

Fourth Year. During the quarter of the year when he is assigned to the Medicine Clinic the student spends three half-days per week in psychiatry. Here he interviews patients in the diagnostic clinic and also in the treatment clinic (on a different afternoon). He is assigned a selected patient for weekly therapeutic interviews, which he conducts throughout the quarter, with regular supervision by a staff psychiatrist. He attends a treatment seminar each week and also a case conference at which diagnosis and disposition recommendations are made on cases from the diagnostic clinic, which are presented by him or by members of his group. Through this experience in the out-patient clinic where he is given a considerable amount of responsibility for the handling of patients, the student has the opportunity of learning, under competent psychiatric supervision, how to use the doctor-patient relationship and how to treat, confidently and effectively, the minor psychiatric problems that he will encounter in his future practice.

POSTGRADUATE TRAINING IN PSYCHIATRY

In 1949, the residency training program of the Department of Psychiatry was first approved (for two years' training) by the American Medical Association's Council on Medical Education and Hospitals and the American Board of Psychiatry and Neurology. In 1951 the full three-year program was approved, preparing the resident for board certification. A wide variety of clinical services is available to the trainee, at the Medical Center, at the Kansas City Veterans Administration Hospital, and at other affiliated institutions.

Each resident's sequence of clinical services is planned to suit his individual interests and needs, in accordance with the type of psychiatric work that is his ultimate goal. However, the basic course includes a period of 12 to 15 months on the In-Patient Service, a three-month assignment on neurology, and assignments to the Out-Patient Section, the Child Psychiatry Section, and the Psychosomatic Section. If the resident is planning to enter the special field of child psychiatry, he may be assigned for a period to the

Child Study Unit (an affiliated institution for postgraduate training and research in child psychiatry, which is located at the Medical Center), or he may elect to take a fourth year of training there. In conjunction with the clinical training there are didactic courses and seminars, plus clinical and teaching conferences of other departments on various subjects in areas related to psychiatry (e.g., neuropathology).

In some respects, the progress and results of the residency training program have been gratifying. Starting from scratch during the post-war period, when teaching personnel was difficult to obtain, a residency program has been developed that affords its trainees a thorough and comprehensive training in psychiatry. Moreover, a small beginning has been made in meeting the critical need for trained psychiatrists in this area; four residents trained in the program have taken important clinical and teaching positions in the medical school and affiliated institutions. However, the number of physicians seeking residency training, particularly the number of native Kansans, is far too small. In relation to the great need for trained psychiatrists that exists in public and private institutions and in practice in communities throughout the state, the number of trainees is grossly inadequate. It is urgently requested that physicians of Kansas concern themselves with this problem and do all they can to interest native sons and daughters in the field of psychiatry and to encourage young colleagues to take advantage of opportunities for psychiatric training.

In addition to the regular three-year program for the training of psychiatrists, the department offers individualized postgraduate educational opportunities for physicians desirous of psychiatric instruction and supervised experience to improve their effectiveness in the practice of medicine. The *Bulletin of the Department of Postgraduate Medical Education* may be consulted for further information on this subject.

CLINICAL FACILITIES

Inasmuch as the psychiatric clinical facilities at the Medical Center have undergone some change in recent years and are due for a significant increase in the near future, it may be well to describe the facilities and medical services that are available. To simplify the description, adult and child psychiatric services will be discussed under each of these headings. Attention is called especially to the fact that the procedures for referring various categories of patients are necessarily quite different.

Adult In-Patient Service. The physical facility for the care of psychiatric in-patients is the Psychiatric Receiving Ward. As has been mentioned, this will soon be moved to a new psychiatric unit, on the main campus of the Medical Center, connecting with other wards of the general hospital. The capacity of this new unit will be roughly three times that of the present facility, or more if the factors of increased operating efficiency and the added capacity of the "day hospital" are taken into consideration. The function of the day hospital will be to provide, through the daytime hours, all the treatment modalities available to bed patients. Patients who are convalescent and sufficiently recovered that they may be discharged from in-patient status may live outside the hospital and return to spend a certain number of days or parts of days per week within the hospital.

It is a policy of the service that all patients referred for admission should be seen by a member of the staff before actually being admitted. This results in a better relationship between patient and staff and usually facilitates subsequent treatment. Therefore, if in-patient care is unquestionably necessary or is thought to be probably indicated, the referral procedure begins with the setting up of a consultation appointment for the patient to be seen by a member of the staff. Requests for such consultation appointment or for any desired information regarding admission of patients should be addressed to Admissions Secretary, Psychiatric Ward. In cases where it is definitely known that private consultation and/or private patient hospital care by a particular staff member who accepts private patients is desired, the case may, of course, be referred in the usual manner to the psychiatrist in question.

Adult Out-Patient Facilities. The psychiatric Out-Patient Clinic offers diagnostic and consultation services for indigent patients. The patients are seen at the "screening" or diagnostic clinic, which meets two afternoons each week.

A large proportion of referrals to this clinic are from other clinics of the Out-Patient Department of the Medical Center, but direct referrals may be made by outside physicians. The capacity of the clinic is usually adequate to meet the needs, without the accumulation of a large waiting list, but the clinic necessarily operates on an appointment basis. Referrals to the clinic or requests for information should be addressed simply to the Psychiatric Out-Patient Clinic at the Medical Center. Facilities for out-patient psychiatric treatment, especially for cases requiring long-term individual psychotherapy, are, unfortunately, quite limited.

Selection of cases for the treatment clinic is handled by the screening clinic. While a certain number of minor psychiatric problems can be handled satisfactorily in the "student treatment clinic," where senior medical students carry cases under staff supervision, the treatment of more difficult psychiatric

problems in the clinic is carried out by psychiatric residents, treatment of selected cases under staff supervision being an important part of their training in psychotherapy. Thus, the capacity of the clinic to handle long-term treatment cases is closely linked to the size of the residency program. It is hoped and anticipated that this will increase as time goes on. There are also limited facilities for psychiatric diagnosis and treatment of private out-patients, since most of the members of the teaching staff have a certain amount of time for work of this sort.

Psychiatric Services for Children. There is, at present, no special psychiatric in-patient facility for children. However, children who are suitable for hospitalization on an open pediatric ward may be admitted for observation and treatment. Ample facilities are available for the out-patient examination and treatment of children presenting psychiatric problems. A Child Psychiatry Clinic functions as a unit of the general Pediatrics Out-Patient Clinic two mornings each week. All patients referred to the Child Psychiatry Clinic are first seen in the general Pediatric Clinic. Patients not eligible for clinic care may be referred by special arrangement to an attending psychiatrist.

The Child Study Unit. In addition to the above-described facilities an important treatment asset of the Medical Center is embodied in the Child Study Unit. Although affiliated, and cooperating, it functions as an independent organization or branch of the Medical Center. The Child Study Unit is primarily a research and training center for postgraduate training of workers in all disciplines involved in the psychiatric treatment of children. Although not organized for the purpose of providing clinical services, the Child Study Unit accepts selected out-patient cases for diagnostic study and treatment.

Department of Public Health And Preventive Medicine

Objectives of Instruction. The objectives of instruction in the Department of Public Health and Preventive Medicine, as offered in the entire course, may be summarized as follows:

1. To help bring to the student physician understanding and acceptance of the role of medicine in society and of the preventive concept in a broad sense as a guiding philosophy in medical practice. To encourage the student to live by the principle that his vocation as a physician above all else is that of service to his community and that preventive medicine is basic to complete fulfillment of his role as a true physician.

2. To teach health as well as disease in developing better understanding of human biology in terms of the reaction and adaptation of man to his physical, biological, and social environment as a frame of reference for the physician in dealing with individual and community problems.

Department of Radiology

The Department of Radiology has grown from the one room occupied 30 years ago in the basement of the Administration Building to our present quarters. When we moved upstairs in 1940 Dean Wahl remarked that we would "rattle around a bit." Since that time the floor space has been expanded, and waiting patients are still required to sit in the hall. The situation merely reflects the growth of the Medical Center over 30 years.

Three radiologists function in the department. There has been a systematic effort to divide the activities of the radiologists into: (1) administration and supervision of radium and x-ray therapy; (2) the isotope program, and (3) special procedure activity. The latter includes angiocardiographs, cerebral angiograms, bronchograms, myelograms, and the development of a research program. Routine diagnostic work including gastrointestinal study is divided among the three radiologists. Each individual is expected to assist, as the work load shifts, in that area where help is needed.

The department has a place for four residents in training in radiology. A well balanced training program with experience in all of the facets of the field of radiology is offered. An attempt is made to supervise closely the first two years of training. In the third year the resident is encouraged to make his own decisions with consultation available as requested.

The department accepts all work requested, and this work is done on the day that it is ordered. A backlog of work is not permitted to accumulate. The average work load is approximately 25 therapy cases per day and 95 diagnostic cases per day. The number of cases listed does not give the entire picture. One of these cases may be a simple x-ray of a hand while another may be a complicated laminograph or arteriogram, procedures requiring considerable time and special apparatus.

The teaching program in the medical school is not as elaborate as it is felt that the field of radiology merits. It is not at all as inclusive as was the program offered as recently as two years ago. The program consists largely of consultation periods with small groups of students. It is possible for the student to go through medical school without having had ac-

cess to some of the fundamental principles of radiology that many of the men now in practice learned while in medical school.

The teaching obligation also includes a few sessions with nurses. In this program the residents are encouraged to participate.

A two-year training program leading to the status of a registered x-ray technician has been developed. This program is largely one of practical experience in various activities of the x-ray department and is augmented by a series of lectures by an instructor and the physicians in the department.

The management of the university has been generous to the department in accepting recommendations for new and replacement equipment during the last few years. It is felt that the department is as well or even better equipped than is the radiological department of many medical schools. Plans are being formulated to increase the efficiency of the radiation therapy department. It is hoped that these plans may be completed within the next year.

True research including animal experimentation was an impossibility during the period prior to July 1, 1953, because of the work load and limited professional help. Any time spent in research would have deprived patients of adequate care by the department. It is the hope that now with three staff men available there will be time for this important aspect of radiology. Despite the work load, a rather elaborate follow-up record of all cancer cases treated in the department of radiology has been kept. From every three months to a year a personal letter goes to a patient who has received care in the department, suggesting that the patient return for a check-up examination. If that is not possible a note is requested relative to the patient's condition. Periodically over the years cases of special interest have been re-evaluated, summarized, and described in the literature. A constant effort is made to assess the value of any new method of treating cancer by radiation, and where justified the new method is adopted by the department.

ISOTOPE SECTION

The department of radiology first started using radioactive substances in May of 1950. At this time both radioactive iodine and radioactive phosphorus were made available. Since that time the use of radioactive material has steadily increased. This section of the radiology department functions in the same manner as the rest of the department. Requests for various isotope studies desired are initiated by the referring physician.

The greatest volume of work is in the use of radioactive iodine. Approximately 3,000 radioactive uptake determinations for thyroid gland function are done per year. In the past year a tracer-scanner has been added to our armamentarium. This permits accurate mapping of the gland and actually makes it possible to draw an outline of the thyroid gland. This is of value in studying nodules in the neck, particularly those related to the thyroid gland. Approximately 300 of these studies are being done each year.

In addition to diagnostic work done with radioactive iodine, more and more patients are being treated with radioactive iodine for hyperthyroidism. One hundred fifty such patients were treated in the past year. Results have consistently been comparable to surgical results.

Radioactive phosphorus is used principally in treatment of polycythemia and leukemia. This work is done in conjunction with other forms of therapy. It seems to be an efficient method of delivering total body radiation. Approximately 75 patients are treated a year.

Radioactive gold is being used in the treatment of malignant effusions both in the chest and in the abdomen. This is a potent radio isotope and requires considerable care in its handling. The volume in this form of treatment is not comparable to those forms mentioned above. Approximately 40 patients have been treated with good results in 50 per cent of the cases.

The latest additions to the isotope sections have been the use of cobalt tagged Vitamin B 12 in a test for pernicious anemia. This procedure is just starting. Experience is therefore limited. However, reports on this test elsewhere are exceedingly encouraging; at the moment this appears to be an accurate and simple test.

Additional services are being contemplated for the near future; these include the determination of blood volume and red cell mass.

RESEARCH AND DEVELOPMENT

The x-ray therapy section has cooperated with the investigations of numerous members of other departments engaged in the study of effects of x-rays, by scheduling a regular period of time twice a week when the therapy machines are made available for experimental work. This system seems to be working satisfactorily and no separate equipment for x-ray therapy experiments is contemplated, at least for the immediate future.

The development of a plastic ruler for roentgenology has been progressing slowly due to efforts to synthesize design suggestions from the showing of the preliminary drawing last year. This ruler should be completed within the next few months and will have utility for anyone reading x-ray films, especially orthopedic surgeons.

The students for whom Dr. Youngstrom has served as advisor have been initiated into the techniques of clinical research. One has done a case study of the treatment of carcinoma of the urinary bladder, and another has investigated the range of size of the upper mediastinal shadow in newborn and young children. The project is planned as a preliminary to a study of what happens to children who have large upper mediastinal shadows. The study is necessary to evaluate recent work indicating that cancer of the thyroid is ten times more common in children who have had radiation to the thymus in infancy, than it is in the general population.

The study of the effects of ionizing radiation of the hypersensitive state is being investigated in collaboration with the Department of Microbiology. This project is progressing according to plan, and significant results have already been obtained which will be reported in the near future.

A grant has been requested from the U. S. Public Health Department to cover cost of equipment in the amount of $10,016 for the investigation of "correlated speech studies of the pre- and postoperative cleft palate by use of a new rapid cine radiographic technique." This is a group endeavor with several departments participating. Action on the grant request is scheduled for March of 1956.

Plans are being formulated for a cooperative investigation of effects of x-ray on lymphoid tissue as it can be studied in dogs' tonsils.

An investigation of the pulmonary circulation in emphysema, pre- and postoperative, is in the planning stage in collaboration with members of the Departments of Surgery and Medicine. Some special equipment for rapid serial radiography of the chest must be developed.

Department of Surgery

The Department of Surgery has considered its primary purposes to be three in number: first, teaching at undergraduate, graduate and postgraduate levels; second, furthering medical knowledge through investigation in both experimental and clinical fields, and third, provision of medical service in its finest form. Each of these functions is totally dependent upon the other, and it is impossible for one to exist without the other. Each has been thought equally desirable, and comparable effort has been exerted in the pursuit of each of the purposes.

The following report indicates the present plan of operation and the activities of the department for the year 1954-1955.

It would be unrealistic to assume the year could pass without losses. The greatest of these for the department was the death of Dr. Thomas G. Orr, Sr., who died unexpectedly November 19, 1955. Dr. Orr had served as the professor of surgery in this department for 25 years preceding his retirement to emeritus status. Dr. Orr held the esteem and affection of the great number of students and patients who had been under his guidance and care throughout the many years of his teaching career. His death represents an irreparable loss to the department.

A consideration of the primary purposes of the Department of Surgery places teaching as the first function. The Surgical Department participates in each of the four years of the medical school curriculum. The effort in the first and second years is limited to participation in integrated seminars, correlation courses, and instruction in physical diagnosis. This effort is a cooperative one with other clinical and basic science departments in the school.

The teaching opportunities in the third year curriculum become greatly increased. Each of the third year medical students is assigned for one-third of the year to the Surgical Department. During this period of time a closely organized teaching program is followed, covering the field of general surgery; no intense effort is directed toward the specialty fields of surgery during this year. Time is divided between scheduled seminars and discussions, ward rounds, operative room work, direct contact with all surgical patients, surgical pathology, and seminars. One-half of the assigned time is spent at the University of Kansas Medical Center and the other half of the assigned time is spent at the Kansas City Veterans Administration Hospital or at Menorah Hospital. The work at these affiliated institutions chronologically correlates with that given at the university.

No work is repeated throughout the trimester, and each student has access to instruction in all of the facets of general surgery. No time or effort is devoted toward the teaching or development of surgical technique, but emphasis is placed upon diagnosis, the early recognition of those diseases amenable to surgical treatment, the indications for surgical treatment, pre- and postoperative care, and what can be expected from surgical treatment. At the termination of the surgical trimester, oral and written examinations are given to each student. The written examination is of the type used by the National Board of Medical Examiners. This year, for the first time, the department used the actual examination which had been given by the National Board of Medical Examiners for examination of the medical student following the completion of his fourth year. Although this has been used for only one-third of the class at present, the chairman of the National Board of Medical Examiners termed the performance "very creditable." The estimate of the performance of the

student for the surgery course is based upon the work of the student throughout his period of clinical clerkship, by the instructors under whom he has had his direct assignments, and by marks achieved in the various examinations.

The fourth year student is assigned to the surgical service for one quarter of the year. During this year he rotates through the specialty surgical services and works in the general surgical out-patient department. Assignment to hospital patients for complete evaluation, operative room work and observation, and assigned seminars and discussions are used by each of the sections for teaching purposes. Final evaluation of the student is arrived at by the correlation of the estimate of each of his instructors and by final examination of the material covered by the specialty surgical sections as well as by general surgical examination. The rather rigid correlation of the work in the two years offers an unexcelled opportunity for carefully supervised instruction in general and specialty surgery in undergraduate training.

The graduate teaching program in surgery starts with the intern or first year following the completion of medical school work and continues through the residency program in general surgery or one of the surgical specialties.

Not infrequently a fourth-year medical student desires to plan a graduate program in surgery. If his decision is firm regarding entering surgery as his chosen field of medicine, he is generally advised to use the first year of graduate training to gain additional insight into fields of medicine other than surgery. The specialty board requirements are such that an adequate opportunity is afforded him in subsequent years to achieve fundamental knowledge in surgical fields. The first year of his graduate education can be more profitably spent gaining a fuller realization of the possibilities and limitations of other areas of medicine.

On the other hand, the fourth-year student who has not yet decided upon surgery as a choice for his field of medicine is urged to spend at least a portion of the first year of his graduate training program on the surgical services so that more insight may be gained into its functions, limitations, and possibilities. During the training of this year an increased responsibility is given the man by the direct application of factual information achieved through the undergraduate years, but no effort is directed toward teaching operative technic.

Following the first year of graduate training, general surgery and surgery specialties at the University of Kansas offer unexcelled opportunities for residency training. It is appropriate to describe in some detail the residency training program on the general surgical service which, in large measure, is duplicated in each of the specialty training programs.

The general surgery program is closely integrated with that of the Veterans Administration Hospital in Kansas City and the Veterans Administration Hospital in Wichita. Residents are simultaneously chosen for the three institutions; the work of each complements and augments the entire training program. Six men are chosen for each of the first two years, four of whom will be carried through the third and fourth years of the general surgery training program if their work proves to be satisfactory. Two of the six men are chosen with the intent and understanding that they are receiving general surgery training in preparation for entrance into a specialty surgical field. Thus a total of 20 men are in the residency training program at the three institutions at any given time.

Each of the men who are receiving general surgery training in preparation for specialty surgery receives six months of specialty surgery training and 18 months of general surgery training during two years as a resident on the general surgery service. The general surgery resident spends six months of the first year in specialty surgery training and six months on general surgery services. During the second year he spends six months on a problem in the laboratory or in a clinical field, and it is the intent of the program that an original contribution to surgical literature be made by the resident during this time. The remaining six months of the second year are spent on private surgical services at the University of Kansas Medical Center.

During the third year nine months are spent in clinical surgery and three months in surgical pathology. The entire fourth year is spent in clinical surgery with senior resident responsibility. An increasing amount of responsibility is given to the resident throughout the entire program, and at the completion of the program he has developed the skill and judgment required for eligibility for American Board of Surgery examinations. It will be noted this represents a columnar system of surgical training as opposed to the pyramidal system. By the adoption of the columnar system it is possible to assure each man taken into the program that his training will be complete and that he will be retained as long as his work proves to be entirely satisfactory. Appointments are made on a yearly basis; in the event work is unsatisfactory or the desire and enthusiasm of the resident wane, the program can be discontinued.

With the increase in the number of people covered by medical insurance, adequate material for resident physician training in surgery is becoming increasingly scarce. The demand that each patient who has insurance coverage be regarded as a private patient

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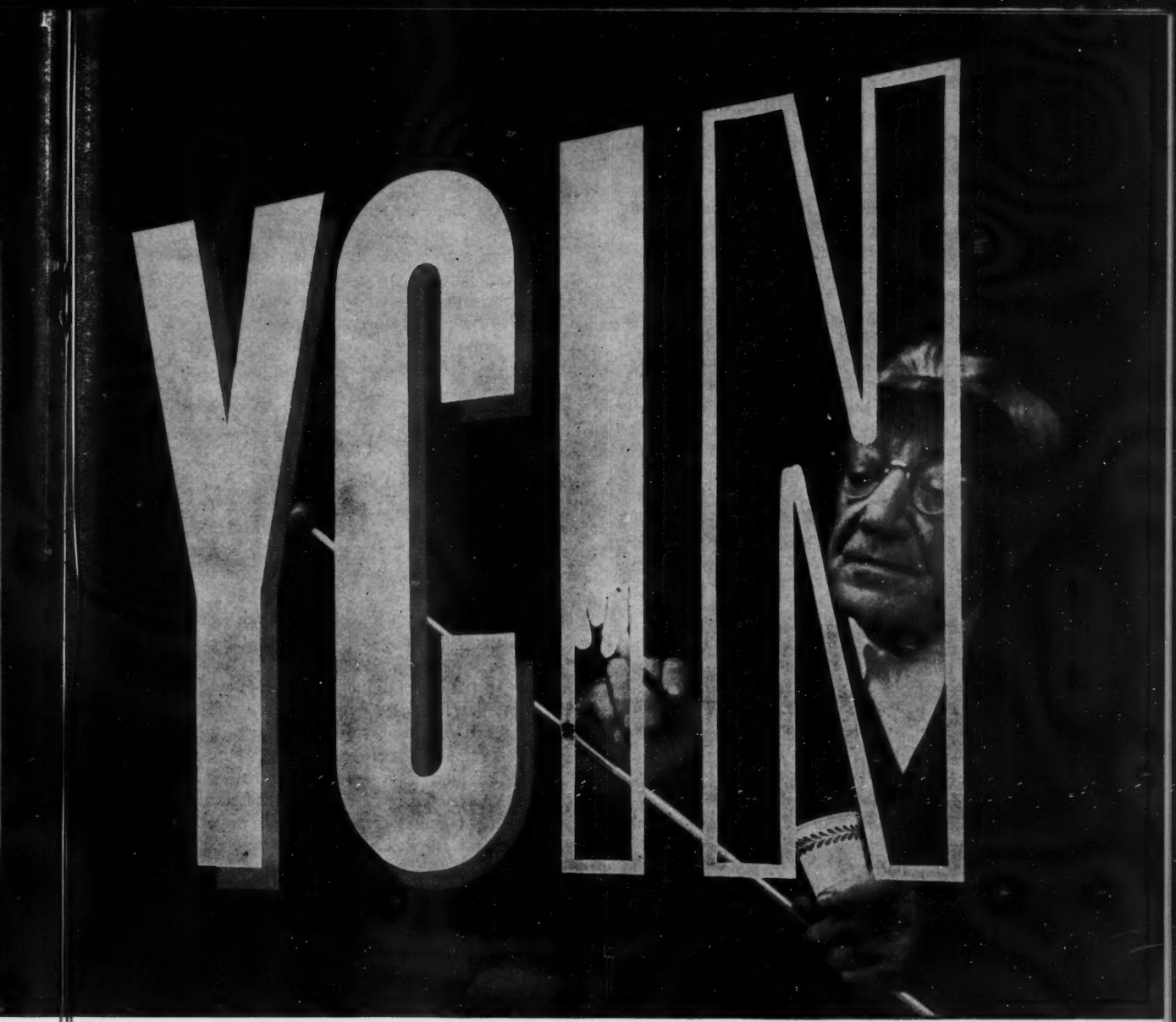

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of the staff physician is unrealistic from the standpoint of the best training of surgeons for future years. The University of Kansas is more fortunate in this regard than most institutions for, by comparison with private hospitals, our indigent patient load remains relatively high, and the affiliation with the two Veterans Administration hospitals provides excellent material for training purposes. Supervision of all work done is carefully controlled without interfering with the increasing responsibility delegated to the resident and the prerequisite for eligibility for examination by the American Board of Surgery.

The postgraduate teaching effort is centered in two formal courses in which all sections of the department participate. The first of these is the course in operative technique, held for one day at monthly intervals for four months. On each of these days a well recognized authority in surgery is invited to act as guest instructor. The operative sessions are televised. Appropriate slides, moving pictures, and other visual aids are used during periods of instruction.

The second formal program is the four-day postgraduate course in surgery which is held during the month of January. Nationally known faculty members are regularly invited to act as instructors during this course. The Kansas Division of the American Cancer Society makes it possible to devote one day of the course to the study of neoplastic disease by a contribution which in part defrays the expense of this day's instruction. The course is designed to give practical instruction in basic and fundamental concepts of surgery.

The increasing scope of the teaching function of the Department of Surgery each year places increasing demands upon the time of the surgical staff and indicates the necessity of increasing the personnel. This has been initiated by appointing surgeons in the locality who are interested in teaching in the outpatient clinic, and it is planned that such appointments be extended.

The second primary function of the Surgical Department is considered to be in the field of investigative work. Funds for this program are not available from the school budget at present, and it is necessary that support for this work come from contributions made by the surgical staff and by special grants from public and private sources. The most productive of these sources has been the surgical staff, whose contributions are incorporated in the Surgical Developmental Fund. A fixed percentage of the gross income of each member of the surgical staff is contributed to the fund, used for any purposes concerned with development of the department. This is felt to be fundamentally the support of investigative work for which other funds are not readily available.

A notable project of the developmental fund for the current year has been the establishment of two research laboratories. One of these is housed in the Medical Science Building and is equipped with the finest instruments and devices required for the more common laboratory determinations. The second laboratory is immediately adjacent to the operating room in an area formerly occupied by an observation gallery which had served no useful purpose. This laboratory is equipped primarily for obtaining objective evidence of changes occurring in patients during surgical operations.

The Surgical Biophysics Laboratory continues to be an active project of the Developmental Fund. In addition to supplying technical support to the Department of Audio Visual Education, facilities and personnel are available in a consultative capacity for the school. The laboratory has been of great assistance in providing solutions to the technical and engineering problems frequently arising in every research project.

There have been a number of investigative projects supported by the Surgical Developmental Fund during the current year. These include (1) study of pulmonary ventilation and lung compliance during surgical operations, (2) factors affecting the efficiency of ventilation during surgical operations, (3) study of the pathogenesis of esophagitis, (4) study of pyloric ganglion cells in hypertrophic pyloric stenosis, (5) development of a pumping mechanism for application in extra corporeal circulation, (6) development and fabrication of a unique apparatus for cardiac defibrillation, stimulation, and for the measurement of the electrical impedance of the heart in the surgical patient, (7) development of a method for enterodialysis for regulation of total body electrolytes, (8) development of a more satisfactory method for extra corporeal oxygenation of blood, and (9) studies on the mechanism of cardiac fibrillation and defibrillation under hypothermia in the experimental animals.

These various activities have represented a considerable monetary effort, but they have established the investigative program of the department on a sound footing. In addition to these studies a grant has been obtained from a pharmaceutical company for the study of materials used in the preparation of the bowel for surgical procedures. Funds have been obtained from the Public Health Service for studies in blood transfusion reactions and for studies on the repair of intracardiac septal defects. Additional funds from the United States Public Health Service and from other sources are being sought to further the investigative program of the department.

The Out-Patient Department of the Surgical Serv-

ices has continued to increase its activity. General surgery and specialty surgery conduct scheduled out-patient clinics which, in addition to being a useful service function, provide the finest source of material for clinical teaching. Clinic facilities are used for the follow-up of patients. This provides the best method of evaluation of surgical therapy and gives information upon which clinical reports may be based.

New patients seen in the surgical out-patient clinics numbered 3,218 in a total of 19,669 patient visits, which represents an increase of approximately 18 per cent over the preceding year.

The last fundamental effort of the Surgical Department is directed toward medical service. It is our firm conviction that this is inseparably related to the other efforts for, in reality, superior patient care is the final purpose of the functions previously considered. Here the medical student should see medical service at its best. This implies that there be no distinction between the quality of medical care offered the private patient or the indigent patient.

Clinical facilities for the surgical service are somewhat limited at present. A total of 182 beds is now allotted to the entire department. This is somewhat below the eventual capacity due to current reconstruction within the hospital building. During the year 3,276 patients were admitted to the department and 5,585 operations were completed.

GENERAL SURGERY SECTION

A deliberate effort has been made to avoid the splintering away of special sections from general surgery. This is in deference to the undergraduate and graduate teaching requirements established according to board concepts. Teaching and research interests of the section have already been indicated.

SECTION OF ANESTHESIOLOGY

Teaching by the anesthesiology section spans the third and fourth years of the medical school curriculum. Concomitant with assignment of clinical clerks to patients admitted to the hospital in these years, there is an assignment of a clinical clerk to assist and observe the administration of an anesthetic if a surgical operation is required. During the total period of student assignment to the surgical services, considerable experience is gained. In addition to clinical teaching, formal discussions and seminars are regularly scheduled.

The graduate level teaching is approved by the American Board of Anesthesiology, and at present eight resident physicians are being trained for board accreditation. The postgraduate course in anesthesiology is the major project in teaching at the postgraduate level.

Laboratory research supported by United States Public Health Service funds has been concerned with determinations of the effect of anesthetic agents on coronary blood flow. The effects of several drugs of potential value in anesthesia are currently subject to clinical investigation.

SECTION OF NEUROLOGICAL SURGERY

This specialty section of the Department of Surgery is presently composed of two full-time members of the attending staff certified by the American Board of Neurological Surgery. They are assisted by three resident physicians in various stages of training in neurosurgery.

The interests of the section continue along three main lines: teaching at the student and graduate resident level, patient care, and investigation.

During the first year of medical training, in cooperation with the Department of Anatomy, students in neuroanatomy participate in a two-hour live patient conference designed to illustrate the clinical application of the principles of neuroanatomy. Fourth year students receive a series of ten lectures presenting factual material relating to clinical neurosurgery of importance to the physician in practice. During the fourth year, students are assigned to the section in groups of six for a 12-day period. During this time the students function as a part of the section, working up all patients in rotation and participating in floor care.

Opportunity for discussion is given during daily ward rounds, regularly scheduled conferences in neurosurgery, neuroradiology, and neuropathology, as well as through individual discussion with the resident and attending staff. All out-patients are similarly observed with attending or resident staff. In addition, conferences are held with each group emphasizing factual material relating to neurological surgery and of importance to the physician in general practice. In all of these student contacts, emphasis is placed on matters pertaining to diagnostic neurology, patient-physician relationship, and patient care, rather than technical aspects of neurological surgery.

At the resident level, the section offers a board-approved, three-year residency in neurological surgery. This program, still evolving, is designed to give a graded experience in applied basic science, diagnostic neurology, and operative neurosurgery. In addition to previously mentioned service activities, four weekly conferences at the exclusively resident level implement this postgraduate program. Clinical research has centered on the behavior and surgical

treatment of intracranial aneurysms. Research continues in methods applicable to the study of the intimate circulation of the brain. This involves better methods of observation and the development of quantitative methods for measurement of regional blood flow.

During the past year the service has enjoyed a better than 12 per cent growth in opportunity for patient care. The service is additionally responsible for neurosurgical care at the Kansas City, Missouri, Veterans Administration Hospital on a consulting basis. This has provided a welcome opportunity for extension of our training program.

ORTHOPEDIC SURGERY SECTION

Teaching of the undergraduate medical student remains the prime purpose of the orthopedic section. Instruction in orthopedic surgery spans the third and fourth year of medical school, but an intensive instruction period is delegated to the fourth year.

Fourth-year students are assigned to the orthopedic section for 12 days. During this time they see and work up all house patients, clinic patients, and emergency patients requiring orthopedic treatment. The students have daily ward rounds and lectures on fundamental orthopedic subjects. Grand rounds are held once a week. Fracture conferences and lectures are given to all students on the surgery services at weekly intervals throughout the academic year.

Current research projects concern bone growth following peripheral denervation and factors concerned in dislocation of the hip.

Graduate teaching efforts are primarily directed toward resident training though there is regular participation in postgraduate courses of the Surgical Department. The orthopedic residency program provides full qualification for examination by the board for certification.

PLASTIC SURGERY SECTION

Teaching activities of the service at the fourth-year student level include daily ward rounds, daily conference with the students, daily instruction in the operating room, wards, and clinic, plus attendance at numerous conferences. Students assigned to the Plastic Surgery Section are on duty in the emergency room at all times, one as first assistant to the house staff and one as second assistant. There is provision for three resident physician staff appointments which are approved by the American Board of Plastic Surgery. Residents are selected for a three-year training experience after two years in general surgery. Teaching at the house staff level consists of various daily impromptu case problem conferences on the wards and in the clinic, often illustrated by slide material and motion pictures. A motion picture relating to plastic surgery is shown every week.

Graduated responsibility is given the resident during his training experience. Resident travel, supported by the Padgett Fund, has been instituted. This permits the senior resident to complete his training program by a tour through the outstanding plastic surgery services in the country.

Research activities carried out during the year concerned further studies in keloid (hypertrophied scar) production. This was done in the Earl Padgett Memorial Laboratory, a laboratory founded by funds left by Dr. Padgett and equipped and maintained by additional funds from other sources going to the same endowment fund.

UROLOGY SURGERY SECTION

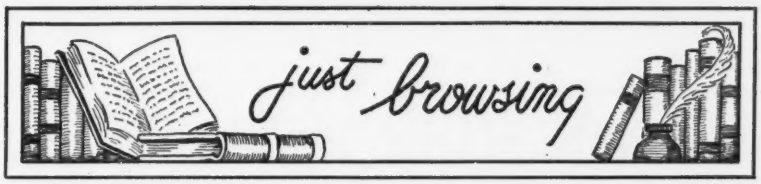
The Section of Urology is composed of the University of Kansas Medical Center Service and the Urology Service at the Kansas City, Missouri, Veterans Administration Hospital.

The Section of Urology participates in the undergraduate teaching program for a short but intensive ten-day period during the student's fourth year. The entire day is spent with the staff in the out-patient department, on the hospital wards, and in the operating areas. Obviously, only a few special technics can be taught, and emphasis is placed on diagnosis and basic fundamentals of urology.

The training of the graduate student at the resident physician level has assumed increasing importance. This obligation has become more important in medical centers because of the steady decrease in training facilities in other hospitals. During the past ten years the number of urology residents has increased in this section from an occasional one to a total of six men at present. After internship each man has two or three years of general surgery training and then three years in urologic surgery. Residents spend equal time on the University of Kansas Medical Center service and on the Veterans Administration service.

A Urology Research Laboratory has been maintained at the Medical Center by generous gifts from the United States Public Health Service, various foundations, and by friends of the school. Research projects of current interest are: (1) the effect of various gonadotropic agents on olegospermia, (2) inhibition of acid phosphatase in cancer of the prostate, and (3) change of renal function preceding and following aortic coarctation repair. The laboratory staff performs special technical determinations for physicians in the state which cannot be done in general hospital laboratories.

The Urology Service offers physicians in the state postgraduate instruction in diagnostic urology on an informal basis for a period of one to two weeks.



One of the comforts that carries us through the trials of any period is the belief that nobody else ever had it so bad. This is a time when the medical profession is fair game for any writer, and the apologists for our group are hard put to keep up with the accusers. One of the continuing irritations for the average physician is the problem of the cults and the practitioners of the weird and occult healing arts. Perusal of some of the old medical journals, however, would indicate that our grandfathers contended with more rather than fewer schools of thought and if anything the identification in the patient's mind with all of these under the heading of "doctor" was even more troublesome than today.

For example, the *Medical Examiner* published in Philadelphia on December 19, 1838, quotes from one of its companion publications. *The Medical-Chirurgical Review,* an article concerning animal magnetism. With acknowledgment to the editors, J. B. Biddle, M.D., M. Clymer, M.D., and W. W. Gerhard, M.D., wherever they may be, we submit the following from this journal with the suggestion that the same attitude of good humor may serve us well in meeting the competition of these individuals:

"If the following report prove to be correct, (and it is said to be authentic,) we must, however humiliating it may be to our pride, withdraw all opposition to Mesmerism, and acknowledge ourselves to have been unreasonably skeptical on the occasion.

"A young and hysterical female had suffered much from most painful menstruation, for some years. It was proposed to try the new agent to lull the pain of back and hypogastric region, during the first day of the dysmenorrhea. For this purpose magnetized water was injected into the vagina, and a piece of nickel applied to the loins. The effect was almost magical. The whole of the uterine system fell into profound Mesmeric coma, which lasted 12 hours, after which menstruation went on calmly and free from pain. The same process was employed at the next catamenial period, and with equal success. The third period passed, without pain, and without any menstruation at all.

"This was considered to be accidental, and that, at the fourth epoch, all would come right. The fourth passed, however, in the same way as the third, and the consequence of this obstruction was morning sickness, and some qualms and caprices as to certain articles of diet. Soon after this, the mammae enlarged a little, and the areola around the nipples became of a darker hue. Still later the young female became plumper about the abdomen than she used to be—and, finally there was no doubt left as to the powers of the magnetized water. The MAGNATES MAGNETICI were now in rapture, and became satisfied that the advent of a young Mesmeric Shiloah was at hand and that he would exhibit the zoo-magnetic powers in the highest degree of perfection. They confidently predicted he will not only have clairvoyance at his finger ends, but that he will be able to magnetize and somnalize every living creature at the distance of the antipodes, if desirable. . . .

"Let us come a little closer to the question. Animal magnetism must either be true or false —a fact or fiction. Suppose it be true—and see the consequences. By a single wave of the hand, we deprive a female of all sense, and throw her into such a profound sleep that the teeth may be pulled out of her head, without the slightest consciousness on her part. Should such a power on the one side and such a susceptibility on the other, be once established, no female in the realm, however high or low her station, would be one day safe from the machinations of the wicked and licentious! In short, the whole foundations of society would be broken up, and every fence of virtue and honor would be leveled in the dust!"—*D.E.G.*

PRESIDENT'S PAGE

DEAR DOCTOR:

We Kansas doctors have much of interest which will transpire during the coming month. Be alert about the schedule and the participation of your office assistants in the training program which begins on March 11 and ends on March 31. This OFFICE ASSISTANTS TRAINING PROGRAM is another Kansas first.

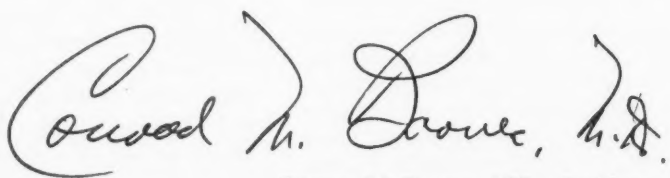
The Annual Kansas Medical Society Day at the Medical Center will be a luncheon and afternoon program for the junior and senior medical students. The program this year will feature "Expanding Horizons," Blue Shield, The Art of the Practice of Medicine, The Doctor and the Community, and a panel consisting of a minister, a young housewife and mother, a city doctor, and a country doctor. The title of the panel discussion will be "What I Want and Expect of the New Doctor in My Community."

At long last, through the voted decision of those present at the University of Kansas Medical Alumni dinner, we will have a realistic, active, and progressive organization. This will necessitate a dues increase, but the rewards to our state, doctors, and medical school will be very heartening.

Dr. Berger and Dr. Voldeng of the Kansas Division of the American Cancer Society have specifically suggested and requested that our county medical societies might credit attendance at the Mid-West Cancer Conference, March 22 and 23, 1956, to their own regular monthly meeting, thus increasing attendance at our cancer conference. This meeting is to be held in Wichita. Let's go!

Legislating medicine and "cultism" to be equal can only bring chaos. Surely the armed forces should not be the forum to find the answer to the cult problem. We doctors of medicine stand united and firm in opposing H.R. 483. Dr. James R. McVay, AMA trustee, has made an excellent presentation in opposition to this bill which would authorize the armed forces to commission osteopaths. Stuart Symington of Missouri is chairman of the Senate Armed Forces Subcommittee which is now studying this problem. Let us not be complacent!

Sincerely, in the Practice of the Art,



CONRAD M. BARNES, M.D., *President*

EDITORIAL COMMENT

School of Medicine Issue

For the tenth consecutive year the March issue of the JOURNAL is a special number devoted to the University of Kansas School of Medicine. As in the past, the Editorial Board is indebted to those at the school who contributed in the planning, organization, and preparation of the material included.

All former University of Kansas School of Medicine issues of the JOURNAL contained scientific papers written by members of the faculty and staff. There was no dissatisfaction with that plan, but a suggestion was made that it would also be appropriate to publish descriptive material about the school, its physical plant, progress being made, research being conducted, and programs and objectives of its different departments.

A meeting of the Editorial Board to discuss this suggestion was held last September, and Dr. W. Clarke Wescoe, dean of the school, and Dr. Vernon E. Wilson, assistant dean in charge of student affairs, were present. They graciously agreed to assume responsibility for assembling material, and the data presented in this issue resulted. Scientific papers from the university which would have appeared in March under the former plan will be published in future issues of the JOURNAL throughout the year.

The Preceptor Program

Editor's Note. The following word picture of the preceptor program now in existence in Kansas was prepared by Dr. Conrad M. Barnes, Seneca, president of the Kansas Medical Society. He is well qualified to write on the subject since he has been intimately associated with the program since its inception.

Enthusiasm is the result when you work your very best for something in which you believe. We Kansans have enthusiasm for our preceptor program. This program is the outgrowth of the work of the Rural Health Committee, which nine years ago was inspired by the proceedings of the National Rural Health Conference. This program, the result of cooperative enthusiasm between the Kansas Medical Society and the University of Kansas School of Medicine, is paying dividends in emphasizing rural general practice.

The people of Kansas are now being blessed with a more personal kind of medical care because of this wise program which welds practice, postgraduate medical training, and the student life into one harmonious union. While participating in this program, the student, professor, and practitioner live, work, and learn together. The program completes the previously unfinished cycle of medical training and helps make the progress of medical learning a continuous thing.

Dr. Mahlon Delp, professor of medicine and chairman of postgraduate medical study, feels that our program gives the medical student a real experience in "A Medical Way of Life." This he greatly needs, for the highly specialized and organized form of group practice he experiences in the Medical Center often makes him feel that he is a small unit in a synthetic, impersonal machine which grinds out diagnoses and treatments. He needs to have the "real" feeling of living with and helping patients on a personal basis. He learns that patients want help, not a diagnosis!

The program in Kansas is operated by the Preceptorship Committee of the medical school. This committee is composed of faculty members and one participating physician preceptor who is or has been a member of the Kansas Medical Society's Committee on Rural Health. To be a preceptor in our program, a physician must be a medical society member and he must live in a town of less than 2,500 population. He must be in private practice and not a member of a clinic or group. He is appointed by the medical school after having been nominated for this position by either the medical school faculty or the medical society. He must be approved by both of these institutions.

When Dr. Jesse D. Rising, chairman of the Preceptorship Committee, called an all day meeting of the committee and a panel of physicians on November 7, 1954, a good representation of the 60 preceptors was present. The proceedings of this meeting concerned nearly every phase of the actual everyday problems and adjustments needed to properly administer and execute the program.

Presently, the length of time the student spends with the preceptor is six weeks. Various time intervals have been utilized since the inception of the program, but six weeks appears to be the most satisfactory. Both junior and senior students participate, and each preceptee must "serve his time" and be evaluated by his preceptor before he can qualify for the degree of Doctor of Medicine. When he returns to the medical school after completing his preceptorship, the student reports on the qualitative and quantitative aspects of his experience and gives the dean of the medical school, Dr. W. Clarke Wescoe, an evaluation of the preceptor's ability and willingness to be a teacher.

This "Medical Way of Life"—the preceptorship—introduces medical students to rural practice. It gives

students an opportunity to see patients in their home environment. It encourages young men to consider entering rural practice. It will improve rural medical care.

While working under the supervision of the general practitioner, the student is given responsibility for patient care in the office, on house calls, and in the rural hospital. The student assists in obstetrical work and surgery, and he participates in the civic and social life of the preceptor as well. He participates in and experiences the recreational facilities of rural life, attends church and service clubs. The preceptor and student have consultations on medical and medical-economic problems and attend local county medical society and hospital staff meetings together.

The student receives maintenance from the preceptor, but he is paid no salary. The preceptor cost of providing this maintenance for the perceptee is estimated by our preceptor group to be between $200 and $300. It is not mandatory, but most of the preceptees live in the home of the preceptor as an "adopted" member of the family during the six weeks period. This is an enriching experience for all concerned and, for the student, it gives an opportunity to project himself forward for three to 30 years. Does he want his family to live as this "adopted" family? If not, what will he do differently?

I have been a preceptor since the beginning of the program in Kansas. My wife has been a great help in the program for, aside from making a "home" for the preceptee, she has told him her attitudes as a doctor's wife.

It is our custom to invite the wife or sweetheart of the preceptee for a visit in our home during the last few days of the preceptee's stay with us. The pride and confidence with which the young student doctor shows her our home and our town and countryside are proof enough of the favorable attitude that is being established. A wise philosopher has said, "Attitudes are even more important than facts."

An important end result of the preceptorship program should be to encourage those men who feel an inclination toward rural practice and general practice into these fields and to prevent those who do not feel so inclined from attempting it. By the presently avowed, necessary nature of our medical schools, the student is in contact only with the specialist and group practice. In this program he gets a look at the other side of medicine whether he chooses to practice it or not.

Everyone profits from the preceptorship program. The "people," called patients by doctors, have better individual care. Six hundred doctor weeks are added to community health service. This is good public relations. There is a removal of pressure on the part of state and local authorities for more adequate medical care. The general practitioner and the medical school realize that each patient is a potential vote against socialized medicine. Because of increased community benefits, there is better understanding between medical schools and their state legislatures.

The medical student profits from the preceptorship program, for he not only lives "a medical way of life," but he is given an opportunity to make a better choice as to the type of practice he chooses to follow. He can make a financial and professional evaluation in making a practice choice while he is being stimulated to embrace general practice in a rural area.

There is improved inter-professional relations as a result of the preceptorship program. The preceptor is included in the medical school program. He is a member of the faculty. He becomes a more perfect physician. He now works with the specialist. There is mutually more respect for the general practitioner and the medical school. The integrated postgraduate program creates wide attendance and is another step in better understanding. A student who elects specialty work, after being exposed to the work of the rural general practitioner, is more aware of the patient's home environment and respects him as a person.

Personally, the physician feels honored by his medical brothers to be selected to participate in such a program. On the basis of the Golden Rule, he is paying back a teaching debt. There is no financial pay equivalent to the honor bestowed upon the preceptor by the preceptee who in true Hippocratean reverence, "honors as his father, the man that teaches him the art."

The preceptor program is not designed to depreciate the specialist, but to get the right man in the right place and to help both practitioner and specialist to help each other. The preceptorship program will help to cure the medical sickness which now exists because of a maldistribution of physicians. This maldistribution is due to the confusion that exists in the minds of many patients. About 40 per cent of all physicians are specialists, but 90 per cent of illness could be taken care of by a general practitioner.

There is a real need for general practitioners in many rural areas. More general practitioners will cure the "sickness" of the medical profession. But we physicians must heal ourselves. We believe that the augmentation and coordination of our preceptor and postgraduate programs will cure the "sickness" in Kansas. At present, 80 to 90 per cent of our preceptees are becoming practitioners in rural communities. These are good results. Our belief in our preceptorship program is justified. Our enthusiasm is increasing.

Vacant areas, where physicians were sadly needed,

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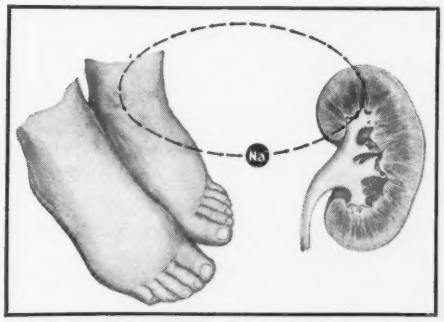
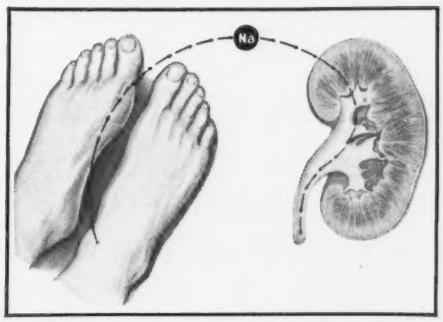


WITHOUT MICTINE — *Prior to diuretic therapy excessive sodium and water are characteristically retained in the edematous patient.*



WITH MICTINE — *Inhibition of the reabsorption of sodium ion leads to an increased excretion of sodium ion, water and chloride.*

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are being filled. Our doctors are better informed. We are enjoying improved public relations. We are enjoying improved inter-professional relations.

What prophecy can we make for the future of the preceptor program? Well, do you think it could ever happen that our city brothers and cousins might learn something from us country folks? I think so! I believe that an urban health committee with a program patterned after our rural preceptor program would be a wonderful help in solving the needs of city patients for more general practitioners.* No doubt this will be the next step forward in our continuing program of a lifetime of medical training for the doctor and a personal physician for every patient. Perhaps this will be the last phase of curing our existing but improving medical sickness.

* Since this article was prepared, a program of intramural or urban preceptorships has been started, and there are 22 preceptors in this category at present.

THE MONTH IN WASHINGTON

Editor's Note. The following summary of Washington news was prepared by the Washington office of the A.M.A. for distribution to state and regional medical journals.

All too frequently overlooked in Congressional activity on health and related bills each year are the little-publicized but highly important appropriations measures—without which no program of the federal government could move forward. The appropriations hearings in the House (where all money bills must originate) rarely get headlines as they are conducted behind closed doors. Weeks and sometimes months later, the hearings are published, but by then the bill supplying money for an agency has been reported to the House.

It's only when the measure gets to the Senate that private groups and individuals are heard—by then in open sessions. Closed House sessions are not new. That is the way it has been done ever since Congress set up a separate committee on appropriations back in 1865.

The importance of appropriations in running the federal government was clearly illustrated when the President submitted to Congress his 1,272-page budget message in which he sought $65.9 billion for all federal programs for the fiscal year beginning July 1.

While there was no overall total of projected spending by all the agencies in the health field, the budget requests for the Department of Health, Education, and Welfare showed a sharp upward trend. And if certain new legislation is voted on this session —like the projected five-year program of construction grants for medical schools and private laboratory facilities—the total figure for subsequent years is likely to be even higher.

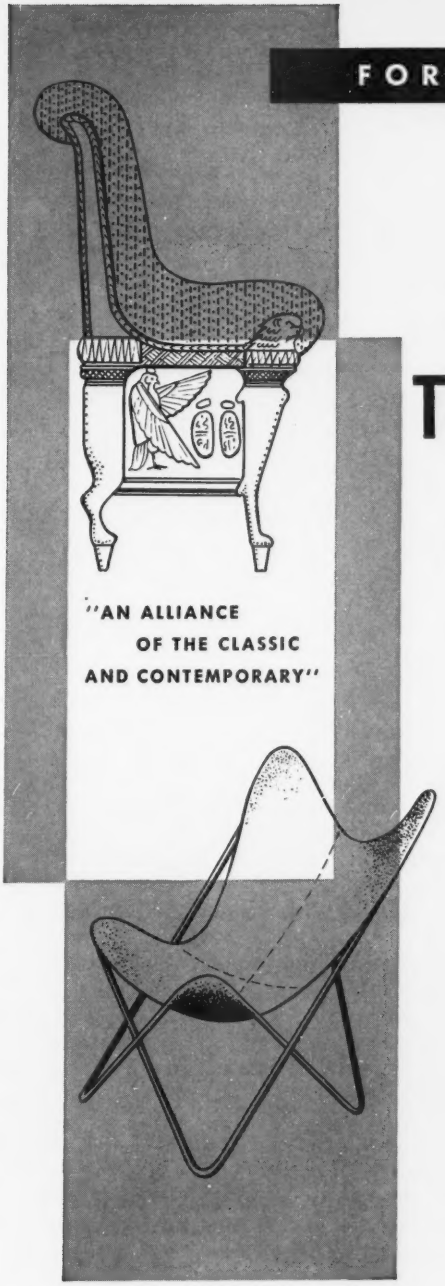
On the medical school-laboratory construction bill, the President asked Congress for $40 million for the first year (estimated cost over five years is $250 million). Construction grants, which would have to be matched on a 50-50 basis, would be available for private medical schools as well as non-federal laboratories conducting research into a wide range of crippling diseases.

The budget message also calls for another $30 million in outright grants to the states to help them in financing poliomyelitis vaccination programs, the same amount appropriated by Congress last session. The administration in a separate request asked for extension of the polio law, from February 15, 1956, to June 30, 1957, and both the House and Senate with only brief debate voted the 17-month extension. Since only half of last year's $30 million was spent up to the February 15 expiration date of the original act, there was no rush for Congress to act on the new account.

Other new spending asked by the administration, contingent, of course, on enabling legislation, includes $10 million for initial capitalization of mortgage loan guarantees for health facilities; $5 million for graduate and practical nurse and professional health personnel training, $3 million for water pollution grants; $1.5 million for mental health expansion programs; and $1 million for sickness and disability surveys in the U. S.

If Congress approves the requests, virtually all segments of the Department of HEW will have more money to spend than in this fiscal year. None would benefit more, however, than the medical research arm of government, the National Institutes of Health. The total sought for the seven institutes is 28 per cent more than estimated spending this year. Here are some examples: National Cancer Institute, $32,437,000, up 29 per cent; National Heart Institute, $22,106,000, up 17 per cent, and the National Institute of Allergy and Infectious Diseases (formerly the National Microbiological Institute), $9,799,000, a 26 per cent increase.

The President requested $130 million for the Hill-Burton hospital-clinic construction program which will be 10 years old this August. In this connection Congress has been asked to extend the act for two years beyond next year, and action is expected this session.



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Tumor Conference

Retroperitoneal Seminoma

Edited by F. Q. WINGFIELD, JR., M.D.

Dr. Helwig: The case to be considered is that of a seminoma which shows some unusual manifestations.

Dr. Proctor: This patient is a 40-year-old white man. His presenting complaint was pain in the right flank and chills and fever and pain in the right hip. The patient had been studied in May of this year in another hospital because of the same symptoms. Roentgenologic studies of the gastrointestinal tract and gall bladder and an intravenous pyelogram were negative. He was given cortisone, since the pain was thought to be due to arthritis. The patient did well until a week prior to admission to this hospital, when he developed chills and fever and a marked exacerbation in his pain. The physical examination was essentially negative except for a mass that was palpable in his right flank. The mass was tender and palpable by rectal examination. The results of blood and urine studies were normal. The admission diagnosis was psoas abscess.

At operation an incision was made in the right flank. The tumor mass was exposed and was found to be much larger than was anticipated. It involved the right ureter, vena cava, and aorta and extended across the midline between the third lumbar vertebrae and the sacrum. Attempts to remove the tumor were stopped because of the patient's condition.

Seven days later the tumor mass was excised en bloc. Dr. Hardin will tell more about that.

Dr. Helwig: Would you discuss the x-rays, Dr. Todd?

Dr. Todd: These x-rays are of interest because they show the psoas muscle shadow to be well delineated. This is one of the unusual instances in which the psoas muscle shadow is seen to bulge quite definitely far to the right. Since the muscle was so sharply demarcated, we do know that there was something behind the muscle instead of in front of it. A perinephritic abscess simply wipes out the psoas muscle shadow. Thus that diagnosis is easily excluded. The urogram shows that the right kidney has poor excretory function. The kidney shadow is not visualized in this study. The left kidney is normal. The retrograde urogram shows hydronephrosis on the right. The right ureter is widely displaced laterally to the right, and the kidney is displaced upward and tilted laterally by this bulging mass. The radiographic diagnosis is between a psoas abscess and a retropsoas tumor. Because of the lack of other evidence of infection, such as destruction of bone in the area of the abscess, which one usually finds in a cold abscess, this was considered most likely to be a neoplasm. The first choice would be a lymphoma. A chest x-ray was normal.

Dr. Helwig: Do you think the mass had grown to that size in five months?

Dr. Todd: I believe it had. His previous x-rays showed a normal intravenous pyelogram and a slight bulge in the muscle, which had increased about three to four times.

Dr. Helwig: Dr. Boley, will you discuss the surgical specimens?

Dr. Boley: The surgical specimen containing the tumor weighed 450 grams and was 16 by 10 by 12 cm. Three centimeters from the pelvis there was an inflammatory lesion which constricted the ureter and caused the hydronephrosis. In some areas the histologic picture resembled a renal cell carcinoma and in others it resembled a sarcoma, but most of the tumor presented a classical picture of seminoma and this was the final diagnosis.

Dr. Helwig: What were the findings in the testicles?

Dr. Proctor: They were examined repeatedly and were found to be normal to palpation.

Dr. Helwig: Were there any tubular elements seen microscopically that might favor a diagnosis of a teratoid tumor with predominantly a seminomatous pattern?

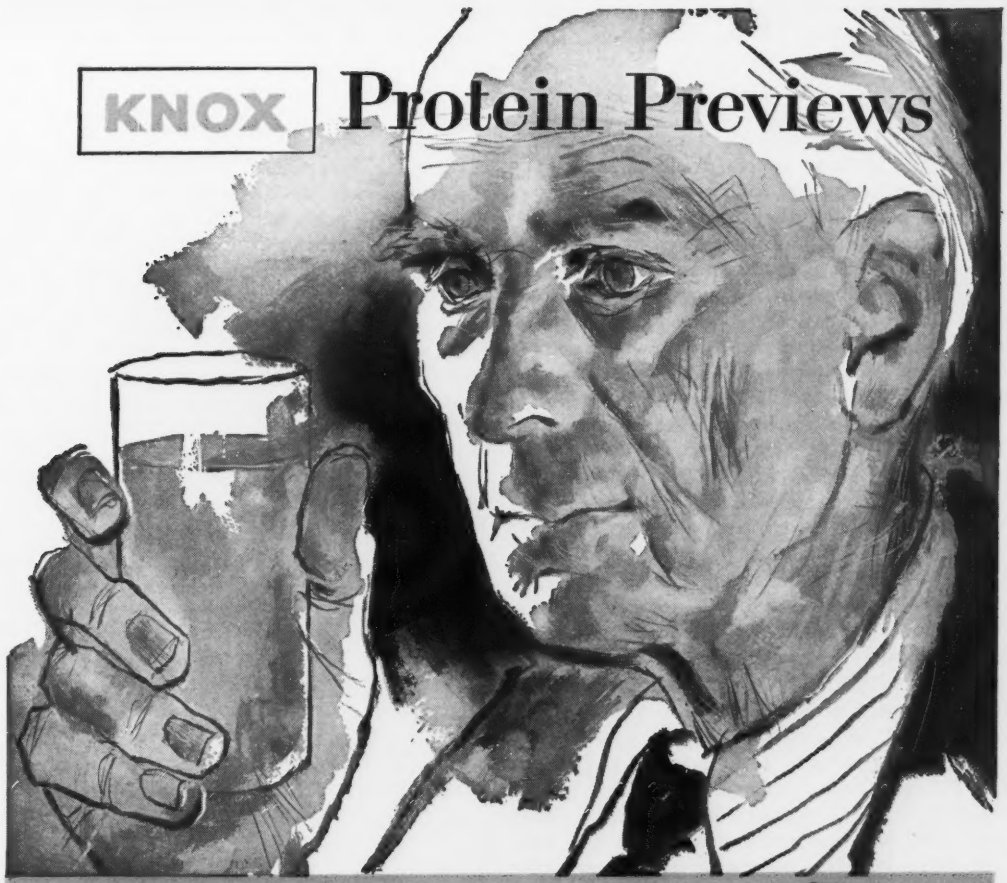
Dr. Boley: No.

Dr. Helwig: Dr. Hardin, would you please discuss this case?

Dr. Hardin: This patient is 40 years of age and had no signs of metastases in the abdomen, chest, or testis. The extensive necrosis at the superior pole of this tumor probably accounts for the chills and fever. Because of the likelihood of death of this patient by hemorrhage from the tumor, the likelihood of venous spread of the tumor, and because the very nature of the tumor was in doubt, we decided that perhaps the best chance for this patient would be to radically extirpate the tumor and give postoperative irradiation. The kidney was removed because of the hydronephrosis. The growth of this tumor had

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute, U. S. Public Health Service, and the Kansas Division of the American Cancer Society. Dr. Wingfield is a Trainee of the National Cancer Institute.

KNOX Protein Previews



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caused compression of the vena cava with complete thrombosis. The patient has had no swelling of the extremities because of the chronic nature of the venous obstruction. The vena cava was ligated above the tumor and the iliacs below it. The left renal artery had its origin above the tumor. The patient was operated on under hypothermia, and an occluding clamp was placed proximal to the renal artery, occluding the main renal circulation for a half hour. A block resection of the entire tumor and involved aorta and vena cava was done, and a prosthetic aortic-iliac graft was substituted. The patient withstood the operation satisfactorily. The urinary function is adequate, and it was 480 cc. two days after operation.

Dr. Fink: Will you remove the testicle for the possible primary tumor?

Dr. Hardin: This poses a challenging problem. Which testicle are we going to remove?

Dr. Helwig: Dr. Mantz, would you like to comment on the presence of hidden or occult seminomas producing such bulky retroperitoneal metastasis?

Dr. Mantz: Examples of teratomas and choriocarcinomas in the gonads which regress to leave only a scar or are too small to be recognized except by study of serial miscroscopic sections, yet have massive metastases elsewhere, are occasionally seen.[1] Some, but not all, of these patients show evidences of endocrine imbalance. Most such tumors have been classified as choriocarcinomas.

Extragonadal tumors, again principally teratomas and choriocarcinomas, have been reported,[1] principally in the retroperitoneal areas, the mediastinum, and pineal region. Tumors of this type may arise from embryonic rests of the urogenital ridge capable of differentiating toward the germinal tissue from which such tumors may arise. These tumors may represent a mixture of cellular types and could be principally of a seminomatous variety. The extragenital choriocarcinomas of the pineal and mediastinum are thought to arise from teratomatous tissues in these sites. No diagnosis of extragenital tumor of this type can be established in the absence of careful microscopic study of serial sections of the gonads. This is especially true if the tumor occurs in a feasible site of metastases of a gonadal tumor, as in this case.

Dr. Helwig: Did hormonal assays reveal any abnormal endocrine secretion, Dr. Hardin?

Dr. Hardin: Hormonal assays showed that the 17-ketosteroids were 3.6 mg./24 hour (normal 8-22) and the 11-oxycorticosteroids were 2.2 mg./24 hour (normal 1-3).

Dr. Helwig: Dr. Todd, how sensitive is this tumor to irradiation?

Dr. Todd: Seminoma is the most radiosensitive tumor of the testicle, and there has been as high as 80 per cent five-year arrests reported with a combination of surgery and radiation when the tumor is confined to the testicle. There have been a number of cases apparently cured by irradiation alone. When retroperitoneal metastases are present five-year survival is about 40 per cent.[2]

ADDENDUM

Following the operation x-ray therapy was started and continued on an out-patient basis. He received 2470 r to the pelvis and 3920 r to the right paravertebral area. The patient gained 15 pounds and returned to work on a half-day basis. Four months after operation, he suddenly developed hematemesis and melena. He was readmitted, and a total gastrectomy was done for multiple benign gastric ulcers. Thirteen days later he expired. Autopsy revealed that a small aortic aneurysmal dilatation just proximal to the aortic graft had perforated into the duodenum. No viable residual tumor was found. Careful examination of the testes revealed a 5 mm. focus in the right testis which microscopically consisted of necrotic cells resembling seminoma surrounded by a rim of fibrous tissue. It was thought that the irradiation to the pelvis or conceivably spontaneous regression accounted for the necrotic appearance of the cells.

BIBLIOGRAPHY

1. Friedman, Nathan B.: The comparative morphogenesis of extragenital and gonadal teratoid tumors, Cancer 4:265-276, 1951.

2. Ackerman, Lauren V., and del Regato, Juan A.: Cancer, Diagnosis, Treatment, and Prognosis, 1947, pages 765-766, C. V. Mosby Co., St. Louis, Missouri.

DEATH NOTICES

ROBERT CAMPBELL MCILHENNY, M.D.

Dr. R. C. McIlhenny, 61, Conway Springs, a member of the Tri-County Medical Society, died on February 9 at Tucson, Arizona, where he was vacationing. Death followed a stroke. Dr. McIlhenny was graduated from the University of Kansas School of Medicine in 1923 and had been in practice in Kansas since that time.

MARLIN SAMUEL MCCREIGHT, M.D.

A physician who had practiced in Oskaloosa for 60 years, Dr. M. S. McCreight, 85, died at a Topeka hospital on February 10. After receiving a degree in pharmacy, Dr. McCreight entered Rush Medical College, Chicago, and completed his work there in 1894. He was an honorary member of the Jefferson County Medical Society.

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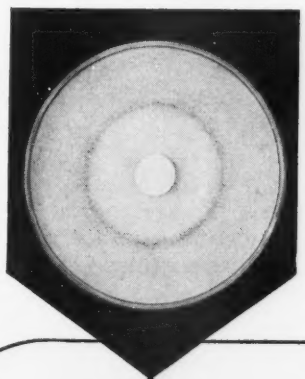

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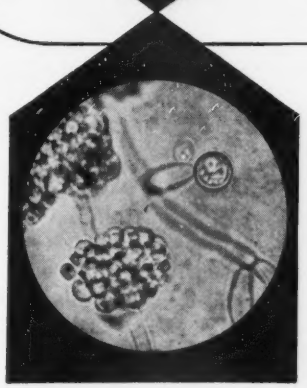

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PHYSICIANS' ACTIVITIES

Dr. John B. Dixon, Parsons, has announced plans to move to Wichita on April 15 to begin practice in ophthalmology at the Wichita Clinic.

Dr. Frederick E. Totten, Wathena, went to McDowell, Kentucky, last month to serve as a staff member of a new hospital for coal miners. His practice in Wathena will be taken over by **Dr. Evan Peterson, Jr.,** a graduate of the State University of Iowa College of Medicine.

Dr. A. M. Pederson, Plainville, was recently named coroner of Rooks County to succeed the late **Dr. E. C. Petterson. Dr. Vale Page** was appointed county health officer.

The Hertzler Clinic, Halstead, announces that **Dr. Emmet McCusker,** a radiologist, is now a member of its staff. Dr. McCusker, a graduate of the New York Medical School, has been in private practice in California during the past five years.

Dr. Warren McDougal, who has been practicing in Colby since his return from military service in Korea, moved to Atwood last month and has opened an office there.

Three Wichita physicians, **Dr. Arthur H. Bacon, Dr. William R. Miller,** and **Dr. John G. Shellito,** were speakers at a recent meeting of District Six of the Kansas State Nurses' Association.

Dr. Charles K. Wier, Wichita, announces that **Dr. Ward A. McClanahan** is now associated with him in the practice of orthopedic surgery.

Dr. Richard Conard, Emporia radiologist, addressed the Rotary Club of Emporia recently on the subject of isotopes in medicine.

A physician who has delivered more than 5,000 babies during his 50 years of practice, **Dr. J. A. Simpson,** Salina, was the subject of a feature story in the *Salina Journal* recently.

Dr. R. Dale Dickson, Topeka, was elected to membership in the American Academy of Allergy last month.

Dr. Charles O. Hoover, Quinter, was guest of honor at a banquet given on February 3 by the Quinter Chamber of Commerce. He has practiced in that community for 31 years, and in recognition of his service was given a lifetime honorary membership in the organization.

Dr. and Mrs. E. N. Robertson, Concordia, returned last month from South America where Dr. Robertson attended the Pan-American Congress of Ophthalmology at Santiago, Chile. Their son, **Dr. Norris Robertson** of Oklahoma City, presented a paper, "Congenital Glaucoma," at the congress.

Dr. Larry L. Calkins, of the University of Kansas Medical Center, presented a paper on the phylogeny and ontogeny of the placental mammalian eye at a meeting of the Oklahoma City EENT Society in January and later presented the same paper before the Colorado Ophthalmological Society in Denver.

The Nelson Clinic, Manhattan, announces that **Dr. Elbert D. McNeil,** formerly of Satanta, is now a member of its staff. Dr. McNeil, a graduate of the University of Colorado School of Medicine, recently completed a residency in pediatrics at the Mayo Clinic.

Dr. William H. Fritzemeier, Wichita, has been installed as chairman of the Sedgwick County Medical Service Bureau Board, a Red Feather agency. **Dr. D. Cramer Reed** is also a member of the board.

Recent developments in psychiatry were discussed by **Dr. DeMerle Eckart,** Hutchinson, at a meeting of the Reno County Mental Health Association on February 14.

A pathologist, **Dr. W. P. L. McBride,** formerly of McFarland, Wisconsin, has joined the staff of the St. Joseph Hospital in Concordia. Dr. McBride is a diplomate of the American Board of Pathology.

Mental illnesses and emotional disturbances in children were discussed by **Dr. Paul C. Laybourne,** of the University of Kansas Medical Center, at a meeting of the Arkansas City Mental Health Association last month.

Dr. Max S. Lake, mayor of Salina, was speaker at capping ceremonies for student nurses at Marymount College in Salina recently. He discussed the history of nursing and the responsibilities of nurses.

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Magnesium

Its Role in Metabolism

ROBERT W. BROWN, M.D., Kansas City

INTRODUCTION

Magnesium salts have been used for many years in the treatment of delirium tremens,[15, 27] toxemia of pregnancy, certain cardiac arrhythmias,[64] as a muscle relaxant in various hyperactive states, and as an aid in anesthesiology.[54, 62] Its use in these conditions has been largely predicated on its known action of supression of nerve and muscle irritability.[8, 54, 61, 62, 64]

Hirschfelder reported relief of muscular twitching in four patients treated with magnesium sulfate who were known to have low serum magnesium levels. Miller[52] reported a case of a six-year-old child with tetany and convulsions associated with normal calcium, phosphate, and carbon-dioxide levels, but with a low serum magnesium who responded dramatically to magnesium therapy. A few other reports of clinical symptoms as a result of magnesium deficit are in the literature,[27, 28, 37, 47] but precise clinical information concerning magnesium metabolism has lagged behind recent studies on other important cations in the body.

MAGNESIUM DEFICIENCY IN ANIMALS

A fairly definite syndrome has been demonstrated in various animals on a magnesium deficient diet. Kruse, Orent, and McCollum in 1932 found that weaned rats on an essentially magnesium free diet developed vasodilatation and hyperemia in the peripheral vascular bed in from three to five days. This was followed by peripheral pallor and cyanosis in 12 to 14 days, with increasing hyperirritability of the nervous system including tetany. Beginning on about the 18th day, the animals developed tonic and clonic convulsions which were followed by death. Animals in the later stages showed cardiac arrhythmias and died of respiratory arrest.[42]

Other workers confirmed these findings in rats,[3, 11, 16, 17, 57] dogs,[56] rabbits,[3] cattle,[1, 23, 59] and chicks,[6] with some species variation. A disease in cattle called "grass staggers" has been reported by Sjollema, in which cows become restless and nervous, have an unsteady gait, muscle twitching, gnashing of teeth, and tonic and clonic convulsions. He was able to show this was associated with low serum magnesium levels and responded to magnesium therapy. Duncan, Huffman, and Robinson demonstrated magnesium tetany in calves on a ration of milk with various supplements.

Magnesium deficiency in animals is made worse by certain variations in diet. Tufts and Greenberg found that high calcium intake caused increased severity and rapidity of onset of symptoms in magnesium deficiency. Adult protein depleted rats on a high protein and low magnesium diet gained about one-tenth as much as similar animals on a high protein and high mineral diet.[50] It was found that the weight gain presumably due to protein synthesis was inversely proportional to protein intake.[51] A high protein diet and magnesium deficit resulted in minimal weight gain and produced symptoms of magnesium deficiency, whereas low protein and low magnesium produced no symptoms and good weight gain. This suggests that magnesium requirement increases with increased protein intake, and the requirement is more than that necessary for inclusion in the tissue formed. Colby and Frye found that a large intake of potassium, calcium, and potassium, or of protein, enhanced magnesium deficiency.

Total magnesium increases in muscle, heart, and kidney during the first stages of magnesium deficien-

Recent investigations into the variations in serum magnesium in certain disease conditions point to the possibility that magnesium deficiency may complicate these states more than is generally appreciated. Hypomagnesemia occurs in several disease states, but studies are necessary to further elucidate the significance of low serum magnesium per se and alterations in tissue magnesium which occur concomitantly.

Many important enzymatic reactions in human cells depend on the presence of magnesium, and there is some evidence to indicate that critically low magnesium levels may play an important part in producing clinical symptoms in cirrhosis of the liver, diabetes, and certain types of renal disease.

This is one of 11 theses, written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Brown is now serving his internship at the University of Kansas Medical Center.

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cy, then decreases to about one-third of normal by 15 days.[20, 30] Brain and muscle magnesium content decrease sharply during the second phase (hyperirritability and convulsions). The serum magnesium levels fall the first six days and then stabilize at about one-half normal, finally rising just prior to the stage of convulsions, but do not return to normal levels.[48] Hevesy has shown that skeletal magnesium is highly labile and forms a reserve easily drawn on by soft tissues, which appear to have a priority.[36] Whether the onset of hyperirritability and convulsions occurs as bone magnesium reserves are exhausted has not been determined. The return of magnesium to bone after depletion is, however, a slower process than its removal.[36]

INTRACELLULAR AND EXTRACELLULAR DISTRIBUTION OF MAGNESIUM

Next to potassium, magnesium is the most plentiful intracellular cation. The distribution of magnesium throughout the body compartments has been estimated by Eichelberger to be about 30 mEq./L. per kilogram of intracellular water as compared with 1.5 mEq./L. per kilogram of extracellular water. According to Martin, body magnesium is distributed as shown in Table I.

TABLE I

Magnesium in Normal Human Body

	Vol.	*mEq./L.*	*Tot. mEq.*
Plasma	3.5	1.83	6.4
Interstitial fluid....	10.5	1.83	19.2
Intracellular fluid .	35.0	45.00	1575.0
Total	49.0		1600.6 (19.0 grams)

Factors which cause magnesium to move from one compartment to another have not been completely worked out, but it apparently reacts similarly to the potassium ion.[10, 24, 48, 67] Terkildsen showed that intercellular magnesium was increased about 15 per cent during the first six hours of shock states due to hemorrhage, operation, anaphylaxis, and anoxia. It then decreased to 5 per cent below normal and, after two to three days, again rose to normal levels. Serum magnesium levels rise after extirpation of the adrenal glands,[4] in diabetic acidosis and coma,[2, 10, 14] and after administering parathormone.[60] High serum magnesium levels have been reported in oxalic acid poisoning,[71] following the use of oral epsom salt in congenital megacolon, in severe renal disease,[12, 25, 34, 37] and hyperthyroidism[60] as well as the above.

Haury and Cantarow found low serum magnesium levels in some patients with diabetes, toxemia of pregnancy, neoplasms, chronic arthritis, and epilepsy. Low levels have also been reported in patients with asthma, lupus erythematosis, hypothyroidism, pancreatitis, after prolonged use of magnesium free intravenous fluids, and in cirrhosis.[27, 35, 46, 47, 48]

PATHOLOGICAL LESIONS RESULTING FROM MAGNESIUM DEFICIENCY

No pathological lesions secondary to magnesium deficiency have been reported in man.[22] In the rat lesions consisting of deposition of calcium salts in the yellow elastic fibers of the endocardium, aorta, jugular vein, and larger arteries are produced. Similar deposits were found on the surfaces of the diaphragm and in the trabeculae and capsule of the spleen. The Purkinje fibers in the heart showed calcification and degeneration.[11, 31, 53]

Schrader[57] described the liver grossly as appearing pale, mottled, and flabby with some areas of severe necrosis. Microscopically there was congestion, vascular proliferation, and perivascular round cell infiltration, with numerous areas of scar tissue with marked lymphocytic and phagocytic infiltration. He described the massive necrosis as predominantly periportal, the degenerated areas being practically acellular except for a few pyknotic nuclei and numerous phagocytes containing debris. The borders of the lesions were sharply defined, but all liver cells showed foaminess of the cytoplasm. He was not successful in obtaining massive necrosis in the livers of all animals, however.

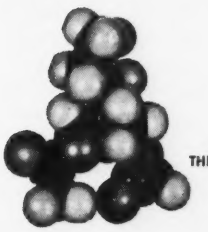
Kidney lesions consisted of degeneration of the tubules with necrosis of tubular epithelium and glomerular injury.

Bird reported degenerative changes in the cerebellum of chicks, and Barron noted chromatolysis and degeneration of Purkinje cells of the cerebellum in the rat and rabbit.

SERUM MAGNESIUM

Normal serum magnesium levels range from 1.5 mEq./L. to 2.5 mEq./L.,[5, 63] depending on various techniques in determination.[21, 40, 41, 68, 72, 73] Hirschfelder found that about 40 per cent of ingested magnesium is absorbed from the intestinal tract, the other 60 per cent being excreted in the feces.[38] The mechanism of absorption from the intestine is unknown, and serum levels do not rise significantly with large oral dosages except when there is preexisting renal disease.

In chronic renal disease low, normal, or high serum magnesium levels have been reported.[12, 25, 38] The magnesium level somewhat correlates with the potassium serum levels, but sufficient studies have not been done to know whether these changes are constant and significant. Martin[47] was unable to correlate serum magnesium levels with non-protein nitrogen or creatinine levels and magnesium renal clearance. They were unable to demonstrate renal tubule secre-



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tion of magnesium such as that which exists with potassium.

The first patients reported had low serum magnesium levels and severe kidney disease. Hirschfelder reported 11 patients, some of whom had generalized muscular twitching and were either comatose or approaching coma. All had low serum magnesium levels (0.95 to 1.31 mg./100 cc. plasma) and were treated with magnesium sulfate by mouth. Rapid rises in serum magnesium levels resulted in all patients with marked clinical improvement of symptoms.

Haury and Cantarow investigated this aspect further and concluded that epsom salt purgation in severe nephritis could produce dangerously high serum magnesium levels. Studies by Smith, however, would tend to refute this, since he found that serum magnesium levels of less than 10 mEq./L. caused bradycardia, flushing, sweating, vomiting, and decreased blood pressure, but much higher levels were necessary to produce coma. Etteldorf studied the effects of magnesium sulfate on renal function in children with acute glomerulonephritis and found that serum levels were raised from 2.7 to 4.4 mEq./L. The only effect was to lower blood pressure from 10 to 30 mm. diastolic.

MAGNESIUM IN ENZYME SYSTEMS

Magnesium has many functions in the body. It is an important part of bone structure.[26] It is a divalent cation which combines to form a metalloenzyme complex which is involved in carbohydrate and protein metabolism. The anerobic deamination of DL-serine by cell free extracts of many animal species proceeds extensively with the formation of pyruvic acid on the addition of magnesium ions.[74] Glutamic acid gets into the citric acid cycle by way of alpha keto glutaric acid, the reaction depending on magnesium ions.[78]

Magnesium catalyzes the action of aspartic and glutamotransferases,[82] is active in the oxidation of propionic acid,[75] and is required in the conversion of flavin mononucleotide to flavin adenine dinucleotide.[82]

The enzymatic synthesis of glutathione from glutamic acid and cysteine requires the presence of magnesium to catalyze the hydrolysis of inorganic pyrophosphate into orthophosphate ions.[7]

The antibiotics, chlortetracycline, oxytetracycline, and tetracycline uncouple oxidative-phosphorylation and inhibit the oxidation of octoanoate in liver mitochondria preparations. The effect of the antibiotics is greatest at low magnesium concentration. This is probably through formation of a complex by the antibiotic and the magnesium ion.[9]

Magnesium has also been shown to enhance the coagulative and complement activities of blood serum.[45]

The role of magnesium in acid-base balances in the body has not been adequately studied, but it probably is of importance since it is one of the more plentiful cations in the body.

CLINICAL ASPECTS

Few clinical and no pathologic changes due to magnesium deficiency have been reported in man. The rapid severe manifestations of magnesium deficiency in animals would make it likely that some degree of this deficiency state might become manifest in man under certain conditions. The chronic alcoholic suffering from multiple dietary deficiencies would seem to be a likely candidate for magnesium deficiency.

Flink and others studied 30 patients with chronic alcoholism and delirium tremens. All had low serum magnesium levels. They divided the patients into three groups: (1) chronic alcoholics with tremor but without frank delirium; (2) chronic alcoholics with tremor and mild delirium, and (3) chronic alcoholics with severe delirium tremens.

The mean magnesium serum concentration in the first group was 1.47 mEq./L. Some were treated with magnesium sulfate and some with other forms of therapy including large doses of vitamins. In the second group the mean magnesium concentration was 1.46 mEq./L. Four of the seven in this group were treated with magnesium sulfate. In the third group the mean magnesium concentration was 1.29 mEq./L. All ten patients in this group were treated with magnesium sulfate. In this series those patients treated with magnesium responded better than those treated otherwise.

Delirium tremens had previously been treated empirically with magnesium sulfate with good results.[15, 76,77] It is well known that most patients with delirium tremens recover spontaneously with sedation and an adequate diet. Some patients in the group above were not given magnesium and made a fairly prompt recovery. However, six of this group were getting progressively worse on other forms of therapy and were improved when magnesium was given. There is not good correlation between low serum magnesium levels and symptoms, since even after recovery all the above patients continued to have low serum magnesium levels, especially those with associated cirrhosis of the liver. Flink concluded, however, that the severity of the symptoms is roughly proportional to the initial magnesium concentration.

Magnesium has been shown to enter liver cells during carbohydrate anabolism.[13] The behavior of magnesium in diabetes mellitis has not been extensively pursued. Martin[48] found that serum levels somewhat paralleled potassium levels, being elevated

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in severe untreated acidosis and falling as insulin takes effect in treatment. However, in diabetic coma with anuria, magnesium levels remained high and potassium levels were below normal. In anuric patients, magnesium serum levels ranged from 6.3 to 9.3 mEq./L., with potassium values as low as 1.96 mEq./L. Despite intravenous potassium therapy, potassium levels did not rise significantly, and three of five of these patients died.

Smith showed that the injection of magnesium sulfate caused a depression of serum potassium with alterations in respiration and flaccid paralysis. By giving potassium and magnesium together, the potassium levels remained near normal and respiratory depression did not occur, but the paralysis was not abolished.[61]

Urinary magnesium is increased during the period of developing acidosis but apparently varies with hydration and urinary volume.

Magnesium has been shown to modify the function of cardiac muscle and its conduction system. Acting alone on the heart it produces a sinus bradycardia followed by AV block, auricular standstill, and a slow idioventricular rhythm. In humans with cardiac arrhythmias due to digitalis poisoning, magnesium abolishes ventricular extrasystoles, tends to restore a regular sinus rhythm, and interrupts ventricular tachycardia. Atropinization causes no change in response of cardiac muscle to magnesium.[64]

In congestive heart failure, magnesium serum levels fall sharply with a rise in urinary magnesium during diuresis induced with mercuhydrin and ammonium chloride.[47] Ammonium chloride will produce a negative magnesium balance.[66] It is known that there is an obligatory loss of magnesium in the urine, but whether the increase in urinary magnesium is a result of increased urine volume alone or if other factors produce an accelerated excretion is not known. Cation exchange resins given to patients with congestive heart failure cause no alteration in serum magnesium levels except during the initial diuresis.[47]

BIBLIOGRAPHY

1. Allcroft, W. M., and Green, H. H.: Seasonal hypomagnesemia of the bovine and clinical symptoms, J. Comp. Path. and Therapy 51:176, 1938.

2. Atchley, D. W.: On diabetic acidosis: detailed study of electrolyte balances following withdrawal and re-establishment of insulin therapy, J. Clin. Invest. 12:297, 1933.

3. Barron, G. P.; Brown, S. O., and Pearson, P. B.: Histological manifestations of a magnesium deficiency in the rat and rabbit, Proc. Soc. Exp. Biol. and Med. 70:220, 1949.

4. Bauman, E. I., and Kurland, S.: Serum magnesium and adrenalectomy, J. Biol. Chem. 71:291, 1926.

5. Bernstein, M., and Simkins, S.: Magnesium content of the blood serum and urine, J. Lab. and Clin. Med. 26:521, 1940.

6. Bird, F. H.: Magnesium supplementation in relation to a previously reported cerebellar disorder in chicks, Poultry Science 25:396, 1946.

7. Bloch, L.: Erythrocyte pyrophosphatase activity and the magnesium ion, Biochem. J. 57:1, 1954.

8. Bozler, E.: Interactions between magnesium, pyrophosphate, and the contractile elements, J. of Gen. Physiol. 38:1 (Sept. 20) 1954.

9. Broady, T. M.; Huruitz, R., and Bain, J. A.: Magnesium and the effects of tetracycline antiobiotics on oxidative processes of mitochondria, Antibiotics and Chemotherapy 4:8, 1954.

10. Brookfield, R. W.: Magnesium elevated in diabetic coma, Quart. J. Med. 6:87, 1947.

11. Brookfield, R. W.: Magnesium deficiency in the rat, Br. Med. J. 1:848, 1934.

12. Brookfield, R. W.: Magnesium content of serum in renal insufficiency, Quart. J. Med. 71:281, 1926.

13. Buchanan, J. M.; Hastings, A. B., and Nesbitt, F. B.: Effect of ionic environment on synthesis of glycogen from glucose in rat liver slices, J. Biol. Chem. 180:435, 1949.

14. Butler, A. M.: Metabolic studies in diabetic coma, Tr. Acad. Am. Phys. 60:102, 1947.

15. Cline and Coleman: Treatment of delirium tremens, JAMA 107:404, 1936.

16. Colby, R. W., and Frye, C. M.: Effect of feeding high levels of protein and calcium in rat ration on magnesium deficiency syndrome, Am. J. Physiol. 166:408, 1951.

17. Colby, R. W., and Frye, C. M.: Effect of feeding various levels of Ca., K, and Mg. to rats, Am. J. Physiol. 166:209, 1951.

18. Coons, C.: Studies in metabolism during pregnancy, Okla. Agr. Exper. Stat. Bull. 223:1, 1935.

19. Cramer, W.: Experimental production of kidney lesions by diet, Lancet 2:174, 1932.

20. Cullen, G. E.; Wilkins, W. E., and Tinsley, R. H.: Electrolytes in human tissue. II. The electrolyte content of hearts and other tissue from cases with various diseases, J. Biol. Chem. 102:415, 1933.

21. Denis, W.: The determination of magnesium in serum, blood and plasma, J. Biol. Chem. 52:411, 1922.

22. Duckworth, J., and Warnock, G. W.: The magnesium requirements of man in relation to calcium requirements, with observations on the adequacy of diets in common use, Nutrit. Abst. and Rev. 12:167, 1942-3.

23. Duncan, C. W.; Huffman, C. F., and Robinson, C. W.: Magnesium studies in calves. I. Tetany produced by a ration of milk or milk with various supplements, J. Biol. Chem. 108:35, 1935.

24. Eichelberger, L., and McLean, F. C.: The distribution of calcium and magnesium between the cells and extracellular fluids of skeletal muscle and liver in dogs, J. Biol. Chem. 142:467 (Feb.) 1942.

25. Etteldorf, J. N.; Tuttle, A. H.: The effects of magnesium sulfate on renal function in children with acute glomerulonephritis, J. Pediatrics 41:5 (Nov.) 1952.

26. Everett, M. R.: Medical biochemistry, New York, Hoeber Inc., 1944.

27. Flink, E. B.; Stutzman, F. L.; Anderson, A. R.; Konig, T.; and Fraser, R.: Magnesium deficiency after prolonged parenteral fluid administration and after chronic alcoholism complicated by delirium tremens, J. Lab. and Clin. Med. 43:169 (Feb.) 1954.

28. Fraser, R., and Flink, E. B.: Mg., K, PO4, Cl, and vitamin deficiency as a result of prolonged use of parenteral fluids, Proc. Soc. for Clin. Research, J. Lab. and Clin. Med. 38:817, 1951.

29. Gardner, L. J.; MacLachlon, E. A.; Pick, W.; Terry, M. L., and Butler, A. M.: etiologic factors in tetany of new born infants, Pediatrics 5:228, 1950.

30. Greenberg, D. M., and Tufts, E. V.: Variations in magnesium content of the normal white rat with growth and development, J. Biol. Chem. 114:135, 1936.

31. Greenberg, D. M.; Anderson, C. E., and Tufts,

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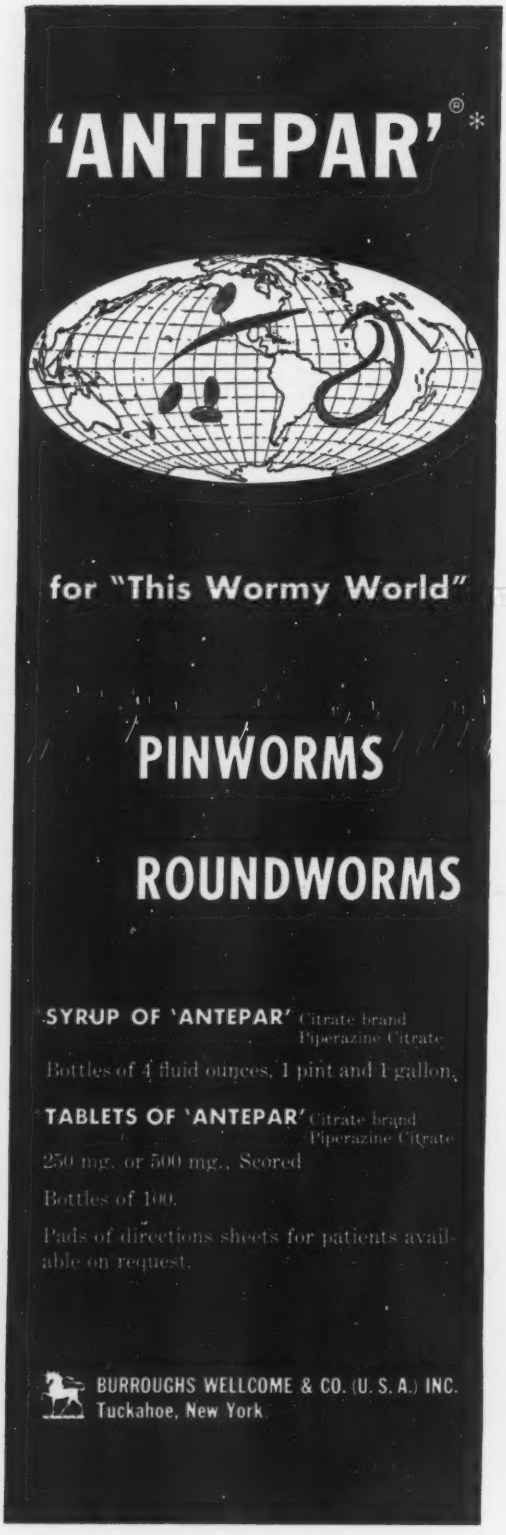
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E. V.: Pathologic changes in tissues of rats reared on diets low in magnesium, J. Biol. Chem. 114:135, 1936.

32. Greenberg, D. M.: Chemical pathways of metabolism, Academic Press Inc., Vol. II, New York, New York.

33. Harris, J. S., and DeMaria, W. J. A.: Effects of magnesium sulfate on the renal dynamics of normal dogs, Am. J. Physiol. 166:199, 1951.

34. Haury, V. G., and Cantarow, A.: Variations in serum magnesium in 52 normal and 440 pathologic patients, J. Lab. and Clin. Med. 27:616, 1941.

35. Haury, V. G.: Blood serum magnesium in bronchial asthma and its treatment by administration of magnesium sulfate, J. Lab. and Clin. Med. 26:340, 1940.

36. Hevesy, Duckworth J., and Godden, W.: Replenishment of depleted skeletal reserves of magnesium, J. Bioch. 37:595, 1943.

37. Hirschfelder, A. D.: Clinical manifestations of high, low plasma magnesium, JAMA 102:1138, 1943.

38. Hirschfelder, A. D.: J. Biol. Chem. 104:647, 1934.

39. Junger, Gunnar: The magnesium content of various nucleic acid components, Science 113:29-36 (April) 1951.

40. Kapuscenski, V.; Moss, N.; Zak, B., and Boyle, A. J.: Quantitative determination of calcium and magnesium in human serum by flame spectrophotometry, Am. J. Clin. Path. 22:7 (July) 1952.

41. Kolthof, J. M.: Biochem. 185:344, 1927.

42. Kruse, H. D.; Orent, E. R., and McMollum, E. V.: Symptomatology resulting from magnesium deficiency, J. Biol. Chem. 96:519, 1932.

43. Kruse, H. D.; Orent, E. R., and McCollum, E. V.: Chemical changes in the blood following magnesium deprivation, J. Biol. Chem. 100:603, 1933.

44. Levitt, L. S.: The role of magnesium in photosynthesis, Science 120:3105 (July 2) 1954.

45. Maltaner, F., and Almeida, J. O.: The parallel effects of magnesium on the complementary and coagulative activities of blood serum, Blood 4:728, 1949.

46. Martin, H. E.; Edmondson, H. A.; Homan, R., and Berne, C. J.: Electrolyte problems in the surgical patient with particular reference to serum calcium, magnesium, and potassium levels, Am. J. Med. 8:529, 1950.

47. Martin, H. E.; Mehl, J., and Wertman, M.: Clinical studies of magnesium metabolism, Med. Clin. N. Am. (July) 1952.

48. Martin, M. E., and Wertman, M.: Serum K, Mg, and Ca levels in diabetic acidosis, J. Clin. Invest. 26:217, 1947.

50. Menaker, W., and Kleiner, I. S.: Effect of deficiency of magnesium on other minerals and protein synthesis, Proc. Soc. Exper. Biol. and Med. 81:377, 1952.

51. Menaker, W.: Influence of protein intake on magnesium requirement during protein synthesis, Proc. Soc. Exper. Biol. and Med. 85:1, 149 (Jan.) 1954.

52. Miller, J. F.: Tetany due to deficiency in magnesium, Am. J. Dis. Child. 67:117, 1944.

53. Moore, L. A.; Hallman, E. T., and School, L. B.: Cardiovascular and other lesions in calves fed diet low in magnesium, Arch. Path. 26:820, 1938.

54. Neuwirth, I., and Wallace, G. B.: On the use of magnesium as an aid in anesthesia, J. Pharm. and Exper. Therap. 35:171, 1929.

55. Nutrition Reviews, 12:6, June, 1954. (New York.)

56. Orent, E. R.; Kruse, H. P., and McCollum, E. V.: Studies on magnesium deficiency in animals. II. Species variation in symptomatology of magnesium deficiency in animals, Am. J. Physiol. 101:545, 1932.

57. Schrader, G. A.; Prickett, C. O., and Salmon, W. D.: Symptomatology and pathology of K. and Mg. deficiency in the rat, J. Nutrition 14:85, 1937.

58. Shohl, A. T.: Mineral metabolism, Am. Chem. Aoc., Monograph Series 82. N. Y., Reinhold Pub. Co., 1939.

59. Sjollema, D.: Nutritional and metabolic disorders in cattle, Nutrit. Abst. and Rev. 1:621, 1932.

60. Soffer, L. J.: Magnesium partition studies in Graves

disease and in clinical and experimental hypothyroidism, J. Clin. Invest. 20:521, 1940.

61. Smith, S. G.: Respiration and paralysis as they relate to Mg-K antagonism, Am. J. Physiol. 164:709 (March) 1951.

62. Smith, P. K.; Winkler, A. W., and Hoff, H. E.: The pharmacological actions of parenterally administered magnesium salts, A Review, Anesthesiology 3:323, 1942.

63. Stutzman, F. L., and Amatuzio, D. S.: A study of serum and spinal fluid calcium and magnesium in normal humans, Arch. Bioch. 39:271, 1952.

64. Szekely, P., and Wynne, N. A.: The effects of magnesium on cardiac arrhythmias caused by digitoxin, Clinical Science (London) 10:2, 1951.

65. Taylor, W. F.: J. Pharm. and Exp. Therap. 35:435 (April) 1929.

66. Tebbetts, D. M., and Aub, J. C.: Magnesium metabolism in health and disease. I. The magnesium and calcium excretion of normal individuals, also the effects of MgCl on the PO4 ion, J. Clin. Invest. 16:491, 1937.

67. Terkildsen, T. C.: Serum magnesium in rabbits during various shock conditions, Acta Physiol. Scand. 27:1, 66-81, 1952.

68. Terkildsen, T. C.: Electrochemical microdeterminations of magnesium, Scand. J. Clin. and Lab. Invest. 4:1, 1952.

69. Tufts, E. V., and Greenberg, D. M.: The biochemistry of magnesium deficiency. I. Chemical changes resulting from magnesium deprivation, J. Biol. Chem. 122:693, 1938.

70. Tufts, E. V., and Greenberg, D. M.: The biochemistry of magnesium deficiency. II. Minimum magnesium requirement for growth, gestation, lactation, and the effect of calcium thereon, J. Biol. Chem. 122:715, 1938.

71. Walker, B. S., and Walker, E. O.: Normal magnesium metabolism and its significant disturbances, J. Lab. and Clin. Med. 21:713, 1936.

72. Yoshimatsu, S.: A new and rapid method for the determination of magnesium with 1 cc. of blood without preliminary elimination of calcium, Tokohu J. Exper. Med. 14:29, 1929.

73. Simonsen, D. G.; Westover, L. M., and Wertman, M.: The determination of the serum magnesium by the molybdivanate method of phosphate, J. Biol. Chem. 169:39, 1947.

74. Chargaff, E., and Sprinson, D. B.: J. Biol. Chem. 151, 273, 1943.

75. Huennekens, F. M.; Mahler, J. R., and Nordmann, J.: Arch. Biochem. 30:66, 1951.

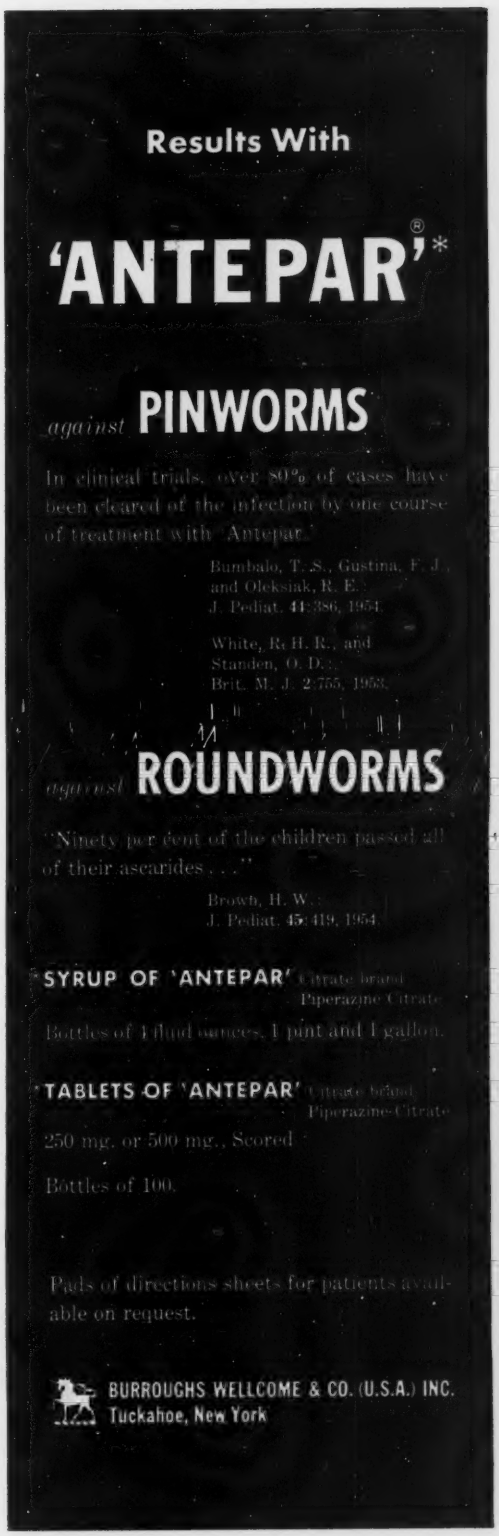
76. Delmass-Marsalet, Lafor, and Faure: Traitement du delarium tremens par le sulfate de magnesie intraveneux, Rev. Neurol. 73:598, 1941.

77. Rossetti, Franco: Il salfate magnesio nelle psicosi alcoolicke. Ross. Studi psichiat. 40:272 (Mar.-Apr.) 1951.

78. Adler, F.; V. Euber, H.; Gunther, G., and Plass, Marcanne: Isocitric dehydrogenase and glutamic acid synthesis in animal tissues, Biochem. J. 33:1028, 1939.

Medical Education Week

Local programs to focus attention on National Medical Education Week, April 22-28, are being promoted by the American Medical Association with distribution of kits containing a wide variety of suggestions and aids for radio, television, newspapers, magazines, and community organizations. The kits were mailed in February to 700 chairmen selected by local medical societies. It is the hope of the A.M.A. that the American people will learn, during National Medical Education Week, of the accomplishments and objectives of the nation's medical schools.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Bumbalo, T. S., Gustina, F. J., and Oleksiak, R. E.: J. Pediat. 44:386, 1954.
White, R. H. R., and Standen, O. D.: Brit. M. J. 2:755, 1953.
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Brown, H. W.: J. Pediat. 45:419, 1954.
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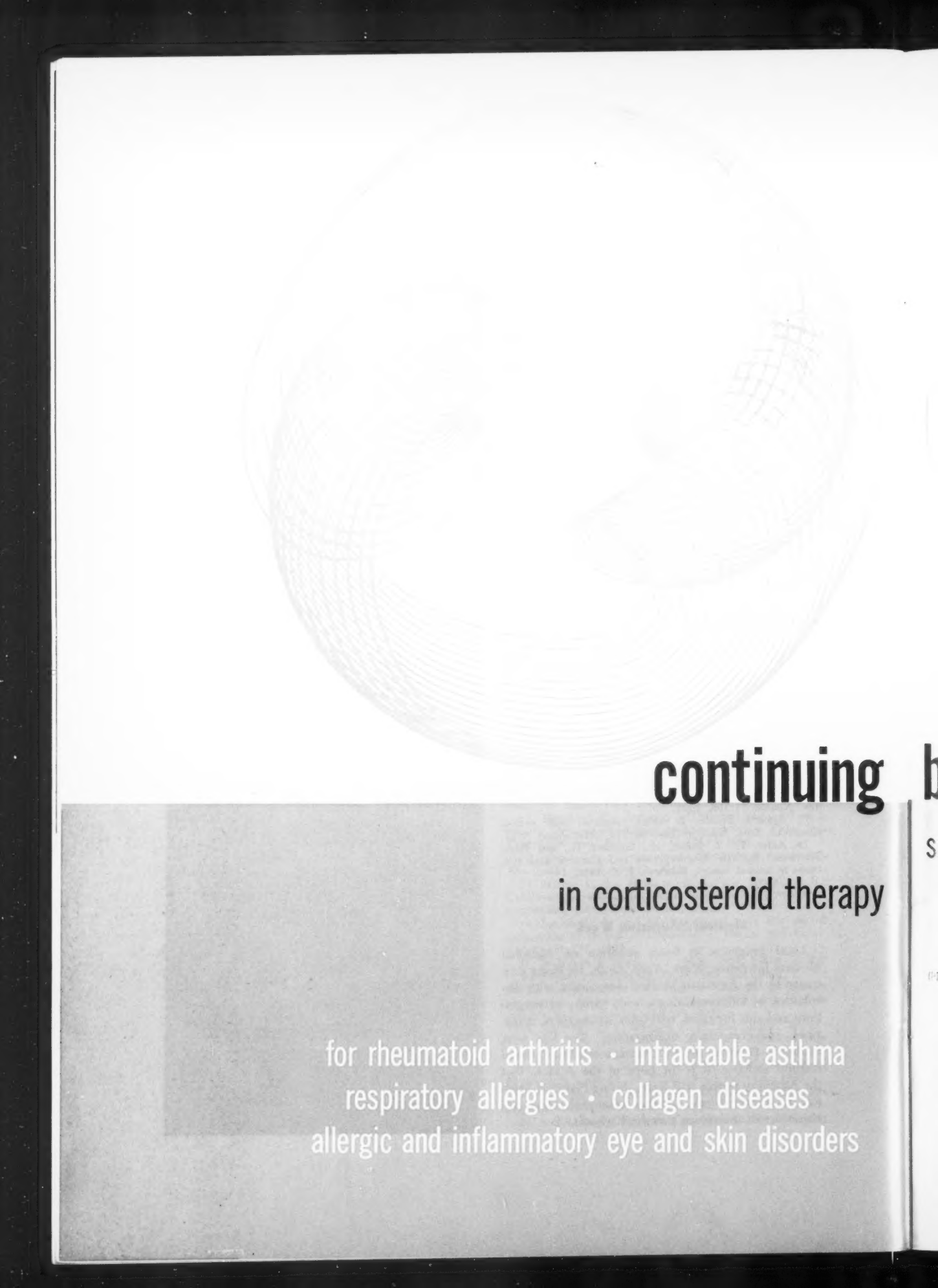
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COUNTY SOCIETIES

Col. Charles H. Roadman, U.S.A.F., MC, director of Research and Development for the Air Force, was speaker at a meeting of the Sedgwick County Society held in Wichita on February 7. His subject was "Research in Aviation Medicine." Before the meeting members of the society toured McConnell Air Force Base.

A meeting of the Shawnee County Society was held in Topeka on February 6. Dr. Francis T. Collins, vice-president of Kansas Blue Shield, discussed proposed changes in the Blue Shield plan with regard to income limits.

Dr. Don Davis, who discussed "Congenital Hypertrophic Pyloric Stenosis," was speaker at a meeting of the Wyandotte County Society on February 21.

Dr. Charles Fleckenstein, Onaga, is serving as president of the Pottawatomie County Medical Society this year and Dr. E. W. Christmann, Wamego, is secretary for 1956.

Members of the Labette County Society entertained the Auxiliary at a dinner meeting at the Parsons Country Club on February 8. Dan Aul, probate judge, was guest speaker.

Members of the societies in Harvey, McPherson, and Marion counties attended a meeting held at Halstead on February 6. Mr. Tom Jones, head of the department of visual education at the University of Chicago, discussed "Visual Education in Medicine."

Dr. Dennis A. Hardman was elected president of the Smith County Society at a meeting held recently at the home of Dr. Victor E. Watts, Smith Center. Other officers are: Dr. Lafe W. Bauer, vice-president; Dr. Watts, secretary, and Dr. Bauer, delegate to state meeting.

A meeting of the Allen County Society was held at the McAtee Rest Home, Iola, on February 14. Members of the Auxiliary were guests. The evening's discussion was devoted to geriatrics and the problem of nursing home care.

Dr. Lucius E. Eckles, Topeka pediatrician, was guest speaker at a meeting of the Riley County Society held at the Gillett Hotel, Manhattan, on February 15. His subject was "The Shifting Scene of Epidemic Disease."

The executive officers of the Kansas Medical Society, Mr. Oliver E. Ebel and Mr. Rueben M. Dalbec, were speakers at a meeting of the Cherokee County Medical Society held at Baxter Springs on February 21.

A special meeting of the Sedgwick County Society was held in Wichita on February 23. The guest speaker, Dr. Lloyd W. Reynolds, Hays, discussed "Past, Present and Future Policies of Blue Shield."

Make hotel reservations now for the annual meeting, Kansas Medical Society, Topeka, April 29-May 3, 1956.

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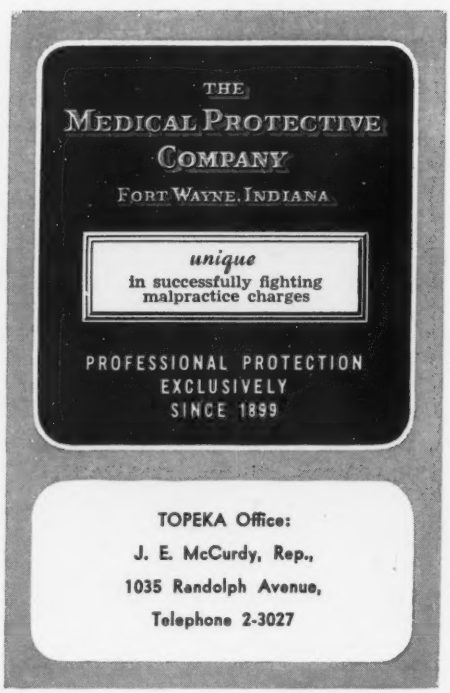

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Patient, white female, age 39, entered hospital with a diagnosis of lymphoma, proved to be lymphosarcoma by biopsy.

Initially she was treated by X-ray radiation, adrenal cortical hormone and an antinauseant. During this regimen she developed a generalized rash which became infected. This was a drug reaction with infection due either to (1) scratching or (2) a low WBC count due to radiation. A number of boil-like lesions appeared over the body.

On 8/4 penicillin was started in a dosage of 600,000 units daily. Penicillin was continued for six days during which time the pyoderma became worse.

Aspirated material from the lesions yielded hem. S. aureus, coag. + and the following sensitivities were obtained: penicillin, more than 10 units; erythromycin, 10 mcg.; tetracycline, 50 mcg. When these results became available penicillin was discontinued.

On 8/9, erythromycin was started in a dosage of 200 mgm. q. i. d. Marked improvement was noted very soon and by 8/12 almost complete healing of all lesions had occurred. Patient was afebrile throughout.

Final Diagnosis: (1) lymphosarcoma (2) secondary pyoderma due to hemolytic Staphylococcus aureus.

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BOOK REVIEWS

Cardiovascular Surgery. Henry Ford Hospital International Symposium. Edited by Conrad R. Lam, M.D. Published by W. B. Saunders Company, Philadelphia. 543 pages, illustrated. Price $12.75.

Cardiovascular Surgery is a compilation of the international symposium on that subject sponsored by the Henry Ford Hospital on March 17, 18, 19, 1955. This symposium was planned as an opportunity for outstanding leaders in the field from several countries to exchange ideas on recent studies on physiology, diagnosis, and techniques in the rapidly changing and advancing field. This necessarily involves discussion on new and controversial work, primarily of interest to those doing advanced surgery or diagnosis in the cardiovascular field.

The book is divided into 10 sections which cover diagnostic techniques, special physiology, specific heart lesions, cardiac arrest, hypothermia, and surgical disease of the major vessels.

In this day of rapid change in concepts and methods in cardiovascular surgery, such a symposium is a valuable summary of the thinking of many of the outstanding leaders in the field. At the same time it must be remembered that many of the concepts and statements may have already changed in the minds of these participants as the book comes off the press. —*R.M.B.*

Cancer Cells. By E. V. Cowdry, M.D. Published by W. B. Saunders Company, Philadelphia. 677 pages, 137 figures. Price $16.

The author presents the problem of cancer in a thoroughly clear, logical, and concise manner with a short but reliable discussion in all its aspects. He explains the cancer cell, why it is abnormal, and how it compares with a normal cell morphologically, physiologically, and chemically. He takes up the factors contributing to its development and its control and discusses its relation to a single trauma, virus, heredity, age, and research prospects.

There is an excellent bibliography available. The summaries given at the end of each chapter will appeal to many busy physicians. Illustrations are clear and well drawn.

The book can be recommended highly to all who are interested in a reliable survey of all aspects of the cancer problem and wish to have a dependable reference on cancer and its impact on man and society.—*H.R.W.*

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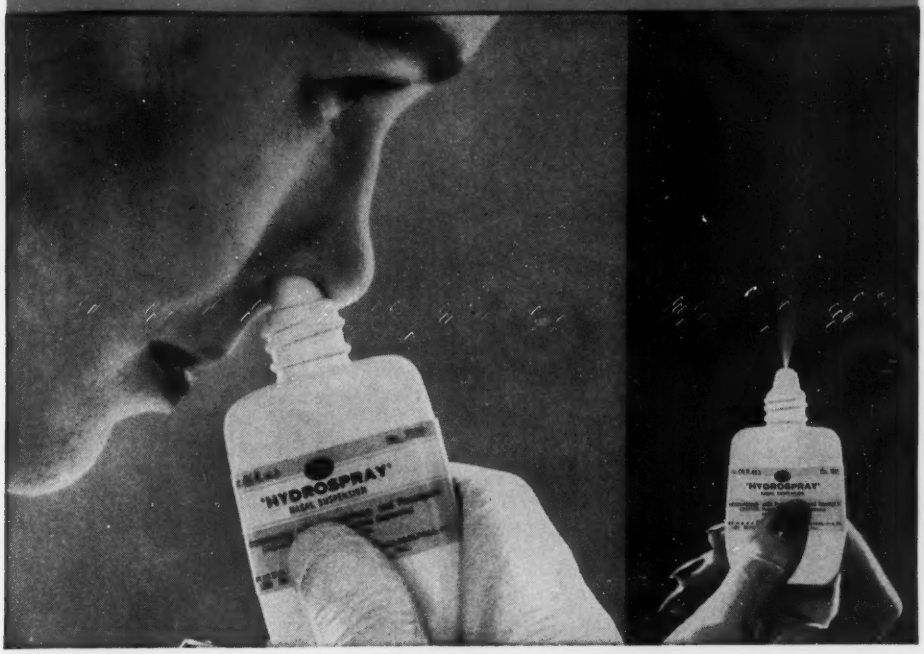

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REFERENCE: 1. Silcox, L. E., *A.M.A. Arch. Otolaryng.* 60:431, Oct. 1954.

Should the Patient Know the Truth? Edited by Samuel Standard, M.D., and Helmuth Nathan, M.D. Published by Springer Publishing Company, New York City. 158 pages. Price $3.00.

This frequently asked question arises in many medical situations, involving not only medical but also social, moral, economic, and otherwise ethical aspects. The book records answers by physicians, nurses, clergymen, and lawyers in a most cogent fashion.

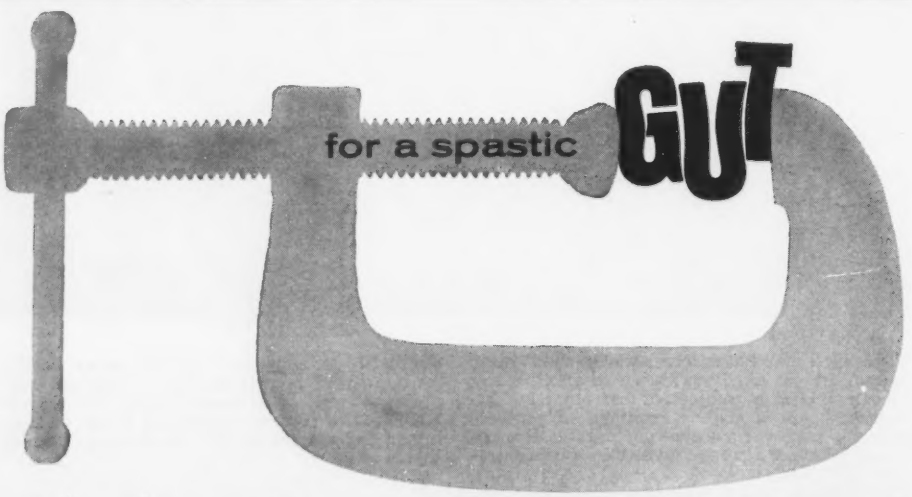
Among the living situations which are discussed, often with examples, are the cancer patient, curable and incurable, the "cardiac" patient, the seriously-ill child, the mother of a malformed infant or a stillborn fetus, the husband and wife who are infertile, the chronically ill patient, and the dying patient. These specific instances are cited so that their manner of management is exemplified and justified from different professional and theological points of view.

Throughout the book there is little quarrel with the basic premise that "honesty is the best policy." The discussion, and most of the philosophies, are concerned with the extent of factual information to impart to which patients. These circuitous philosophies regarding truth make for fascinating reading for all people who have wondered about psychologic reactions within the patient, within the family, and within the patient-doctor relationship. It is particularly good reading for practicing physicians and nurses, the latter especially since they are so constantly and intimately bound to their patients. There is much food for thought and discussion in this short book.—*S.R.F.*

Cardiac Diagnosis: A Physiologic Approach. By Robert F. Rushmer, M.D. Published by W. B. Saunders Company, Philadelphia. 447 pages, illustrated. Price $11.50.

The intent of this book, as expressed by the title, is well achieved. The present standard texts in cardiology, particularly White's, Levine's, and Freidberg's, are primarily an expression of the clinician's viewpoint (although Freidberg, more than the others, has a more physiological approach). Rushmer's book is definitely an expression of the opinion of the physiologist. As such, the man in practice will be disappointed if he expects to find here a system of therapy outlined. Such was not the author's intent.

The chief criticism that I would make is in the preponderance of reference to the author's own work. This is not meant to imply that his work is not valid, but the unilateral approach gives a false balance to the book: the title should be *Cardiac Diagnosis, the Physiologic Approach in My Laboratory.* —*E.G.D.*



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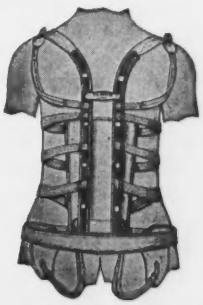

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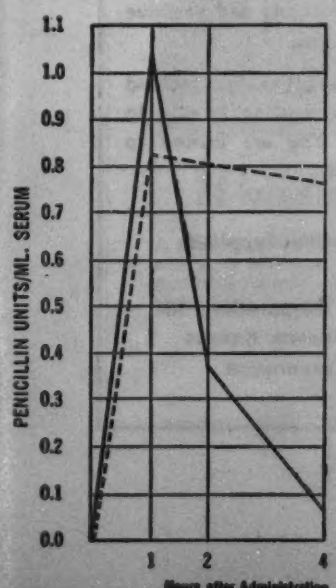

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ANNOUNCEMENTS

Scientific session and meeting, Southern Region of American College of Gastroenterology, Louisiana State University School of Medicine, New Orleans, Sunday, April 8. All physicians invited.

Course in gynecology and endocrinology given week of April 9 by Post-Graduate Medical School, New York University-Bellevue Medical Center.

Seminar in internal medicine and case demonstrations in specialties, April 9 through June 1, offered by Post-Graduate Medical School, New York University-Bellevue Medical Center. Class limited to 20. Tuition $250. Physicians may take all or part. Subjects are allergy, cardiology, clinical hematology, clinical electrocardiography, physiology, problems in diagnosis, acute and chronic diseases of the chest, endocrinology, diseases of liver and biliary tract, gastroenterology, nephritis and hypertension, peripheral vascular disease. Write the Dean, 550 First Avenue, New York 3, New York.

Pan American Medical Association Congress, Mexico City, April 15-21. Four days of scientific sessions, three days of sightseeing. Write the Director, 745 Fifth Avenue, New York.

Eighth annual meeting, Southwestern Surgical Congress, Pioneer Hotel, Tucson, April 16-18. Write the Congress, 207 Plaza Court Building, Oklahoma City 3, Oklahoma.

Thirty-seventh annual session, American College of Physicians, Los Angeles, April 16-20. Write the College, 4200 Pine Street, Philadelphia.

Eighth annual convention, International Academy of Proctology, Drake Hotel, Chicago, April 23-26. Write Secretary, 147 Sanford Avenue, Flushing 55, New York.

Course in regional anesthesia offered by New York University Post-Graduate Medical School, May 7-19. Course in neurological problems of general practice, April 30-May 5. Culdoscopy, April 30-May 4. Urology, May 14-25. Tuberculosis and other pulmonary diseases, June 4-8. Dermatology and syphilology, May 14-18. Orthopedics in general practice, June 11-13. Cardiology, three weeks beginning May

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7. Modern therapeutics in internal medicine, June 11-22. General medicine review, July 9-20. Write the Dean, 550 First Avenue, New York City.

Third National Cancer Conference, sponsored by American Cancer Society and National Cancer Institute, Detroit, June 4-6. Write ACS, 521 West 57th Street, New York 19, New York.

Next examination (Part II), oral and clinical, for candidates of the American Board of Obstetrics and Gynecology, Edgewater Beach Hotel, Chicago, May 11 through May 20. Notice of exact time to candidates by direct mail, also notice of eligibility for those who participated in Part I examinations.

Twelfth congress and graduate instructional course in allergy, New York City, April 15-20. Write American College of Allergists, Inc., 401 Marquette Bank Building, Minneapolis 2, Minnesota.

A.M.A. to Meet in Chicago

The 105th meeting of the American Medical Association will be held in Chicago, June 11-15, 1956. Headquarters for the House of Delegates will be at the Palmer House, and activities will be scheduled at Navy Pier, Northwestern University, and near north side hotels.

Five days will be devoted to lectures, color television, and motion picture presentations to provide a short course in postgraduate education. There will be 350 technical exhibits and more than 300 scientific exhibits.

New Staff Appointees

The following new appointments to the staff of the University of Kansas School of Medicine were announced recently: Dr. David S. Dann, Kansas City, instructor in radiology; Dr. Sidney Rubin, Kansas City, instructor in radiology; Dr. William J. Reals, Wichita, lecturer in pathology, and Dr. Earl Sifers, Kansas City, assistant in surgery.

Mortality Rates

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Lawrence, W. E., Kahn, S. S., and Riser, A. B.: South. M. J. 47:105, 1954.

THE KANSAS PRESS LOOKS AT MEDICINE

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

This Vaccine Mess

The layman, sensibly and logically, is inclined to leave matters of health to the experts. They include doctors, scientists and various government health men. For the most part they are trained, dedicated people who have the know-how and desire to render great public service.

For this reason, no layman is going to try to tell responsible government agencies and the medical profession in detail how the Salk polio vaccine program should be handled. But, at the same time, every layman is conscious of the fact that it has been badly handled from the very top because of the doubts which have been raised and the confusion which has been created.

Two Southeast Kansas county medical associations are currently critical of the methods employed by the state in getting the vaccine to the children who need it. We are not about to try to side with either the associations or the state authorities, but it would seem that the people who are qualified to smooth out the program would do just that.

The real losers in all of the sharpshooting associated with the Salk program are the children who need the protection the vaccine provides.—*Coffeyville Daily Journal, January 22, 1956.*

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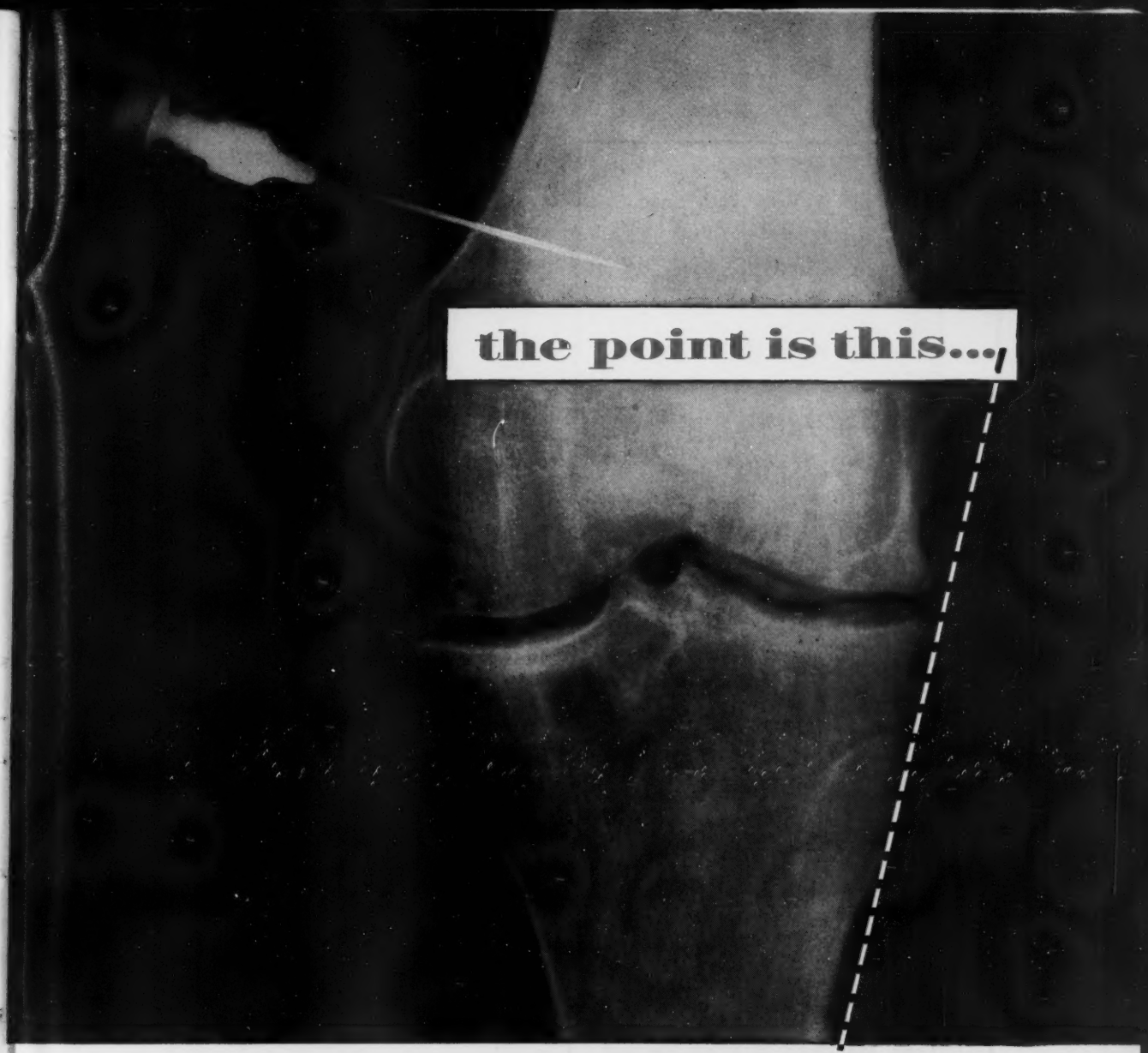

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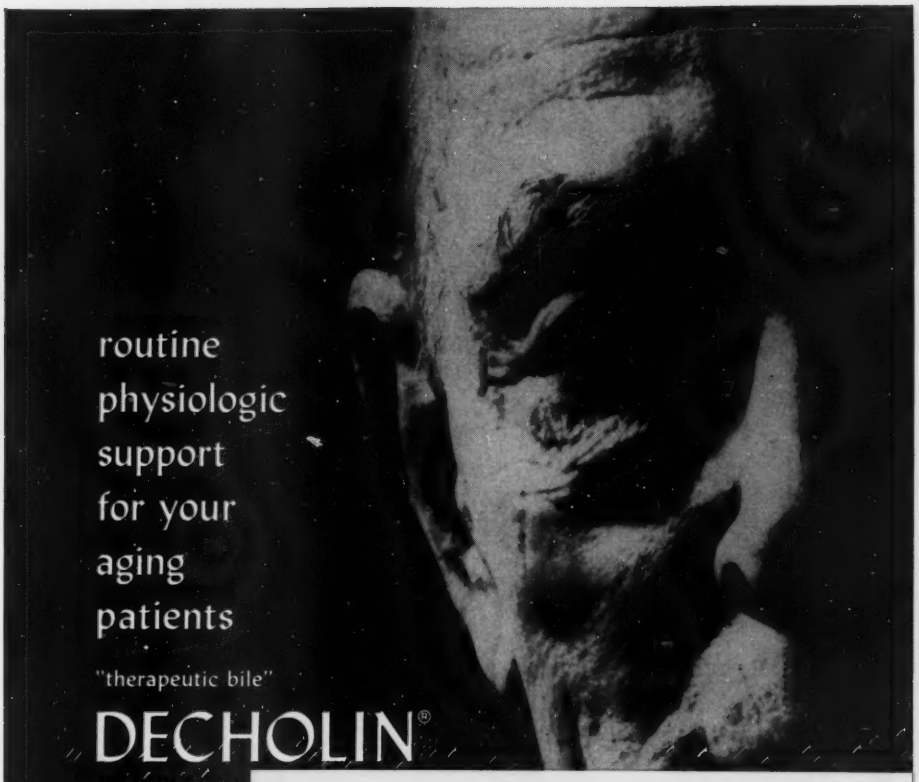

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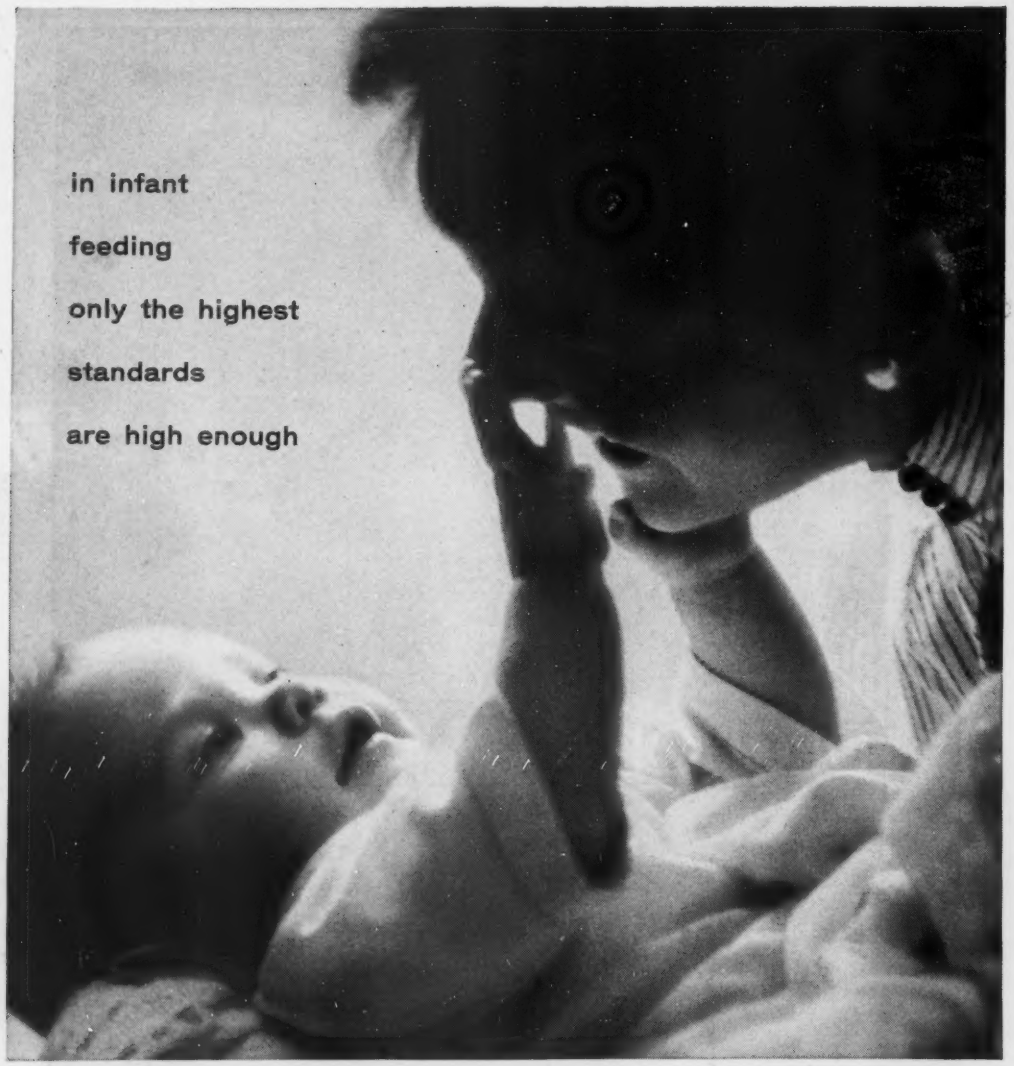

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